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THE GROWTH OF THE POPULATION OF BOSTON.

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The rapid growth of modern cities, particularly American cities, has been the subject of much comment. The discussions have ordinarily been of a general nature, treating the rise of a large number of cities from the standpoint of the modern tendency toward centralization, but giving little idea of the actual phenomena connected with their growth. This inquiry is an attempt to review the more important details connected with the growth of a particular city, with due regard to the various factors which have contributed toward it. The increments from migrations are so varied in their character that account must be taken of them all in order to obtain an adequate conception of the significance of the growth. Moreover, in many cases, they are the chief sources of increase. During the decade 1880–90 the total population of New York increased 26 per cent, while her foreign elements increased 34 per cent; the population of Philadelphia in the same time increased 24 per cent, and the foreign elements 32 per cent. The population of Boston during the decade 1885–95 increased 27 per cent, the foreign population 35 per cent, and the elements, found principally at the North End, composed of Italians and Russian Jews, increased 421 per cent.

Boston, either on account of its early history, or on account of certain traditions connected with it, is often thought to be a more purely American city than many others. While other cities have become cosmopolitan, or even distinctively foreign, Boston is believed to have preserved to a greater extent its old American character. Yet a recent analysis of the population of Boston, embracing three generations, estimates the nationalities as follows:—[1]

Irish, ...	220,000	French, ...	10,000
"Old Americans,"	80,000	Scandinavians, .	10,000
Scotch, . . .	35,000	Negroes, ...	10,000
Jews, ...	30,000	Portuguese, . . .	4,000
English, . . .	30,000	Chinese, ...	1,000
Germans, not Jews,	20,000	Various, ...	17,000
Italians, . . .	20,000		487,000

Even allowing for corrections in these figures the estimate is sufficiently near the truth to show that Boston is not the Puritan town which it once was. Yet an analysis of its population may show that it is still a representative American city.

It was not until the present century that the character of the population became greatly effected by the addition of foreign elements. The inhabitants of Boston during the eighteenth century were primarily of English origin, modified somewhat by Scotch, Scotch-Irish, and French Huguenot elements. There was also a larger proportion of negroes then than now. In 1752 the negroes numbered 1541, and represented nearly 10 per cent of the total population. This seems to be the largest percentage of negroes which the city has ever contained. Over half of them were slaves. With the gradual abolition of slavery, the number of negroes in the city decreased until in 1790 there were only 766. From this time on they slowly increased, but did not surpass their former numbers until near 1820. During the next forty years their numbers were almost stationary, and in 1860 they

[1] William A. Leahy, *Boston Transcript*, Jan. 12, 1895.

were reduced to 1 per cent of the population. They now form about 2 per cent.

The first distinct record which we have of any immigration into Boston other than English is in 1652, when the ship "John and Sara" arrived, bringing 272 Scotchmen,— Cromwell's prisoners, who were sold into service.[1] It is not probable, however, that the city was entirely English even then. Other Scotchmen must have resided here at the time, for the Scots' Charitable Society was established in 1657 with twenty-six members. The immediate need which caused the formation of this society seems soon to have passed, for no further meetings were held until 1684, when new rules were adopted and signed by twenty-eight "residenters of towne & countrie" and by thirteen "strangers."[2] The fact that "strangers" constituted a portion of the membership makes it impossible to ascertain from the list how many Scotchmen were residents of Boston, yet from indirect references we may conclude that they made up but a very small proportion of the population. The Scotch, however, were probably the most important non-English element in the town at this period. There are records of a few Irish in Boston during the seventeenth century; but the strong religious prejudice which existed tended to discourage the immigration of Catholics, whatever their nationality.[3] In 1655 a number of Irish were scattered throughout New England and sold into service, as the Scotch had been before; and some of them settled in Boston.[4] If these Irish were Catholics at first, they did not long continue in the old faith. Fitton says of them: "Under the penal laws, deprived of all religious instruction, their children grew up Protestants."[5] The position of those two nationalities is indicated to some extent in the early town

[1] Winsor, "Memorial History of Boston," vol. iv, p. 659.

[2] "The Scots' Charitable Society." Edition of 1878, p. 31.

[3] In 1647 Jesuits were prohibited by law from entering the colony. "Colonial Laws of Mass." Edition of 1660, p. 158.

[4] See Drake's "History of Boston," p. 342.

[5] James Fitton, "Sketches of the Establishment of the Church in New England," p. 75.

records. Beginning with 1652 Scotch or Irish nationality is occasionally designated as in the following extracts: —

"1652. John Stark, Scottishman, servant to Lieut. William Hudson, died 22nd, 3rd month."[1]

"1656. Edward Coussins of Pulling Point, and Margaret Bird, an Irish maid, servant to John Grover of Rumney Marsh, were married.[2]"

"1658. 26 of 5th, Margaret Noriss, an Irishwoman, is admitted into the Town, and David Faulkoner is bound to secure the Town (from any charges as respecting her), In a bond of seven pound."[3]

During the eighteenth century the immigration was chiefly of the Scotch-Irish from Ulster, which in some ways reinforced the Scotch settlement in the colony. Samuel Swett Green, in speaking of the Scotch in Ireland, says that they intermarried somewhat with the Huguenots and Puritan English, but in the main kept their Scotch characteristics.[4] It was not until after these Scotch-Irish reinforcements arrived that a Scotch Presbyterian church was established in Boston. The Scotch-Irish emigration started about 1717, when, according to Lecky, their leases began to fall in, and rents were doubled or even trebled.[5] The next year five small ships brought one hundred and twenty Scotch-Irish families — seven hundred and fifty persons — to Boston. It was from these families that the Scotch-Irish settlements at Worcester and Londonderry, N. H., were made. Probably not one-quarter of them remained in Boston. The Scotch-Irish immigration continued without interruption during the first half of the century, and was also noticeable from 1771 to 1773; but it was directed chiefly to the middle Atlantic States. Few Scotch-Irish settled in Boston, for it appears that they were not so hospitably received here. The Scotch also seem to have increased very slowly during the century; and at the time of the Revolution nearly all the resident members of the Scots' Charitable Society retired to

[1] "Births, Baptisms, Marriages, and Deaths, 1630-1699," p. 37.
[2] *Ibid.*, p. 58.
[3] "Boston Records, 1634-1660," p. 168.
[4] "The Scotch-Irish in America," p. 6.
[5] *Ibid.*, p. 7, note 1.

Nova Scotia.[1] Many returned after the war was over, and when the society started again it had about twenty members.

The French Huguenots have a unique place in the history of Boston, but they did not long exist as a distinct nationality. In 1686 fifteen French families, comprising about eighty persons, arrived in Boston in a destitute condition.[2] They received a sympathetic welcome from the Puritans. A few more families arrived soon after, and they built a little church on School Street. During the eighteenth century their numbers slowly diminished. Some left the colony and others intermarried with the English, so that in 1748 the communicants of the church had been reduced to seven. From the first, the French showed a natural tendency to assimilate with the English; but at this time it seems to have been unwittingly hastened by the tedious discourses of their minister, Andrew Le Mercier, for it was complained that he had driven all their young people to other churches.[3] The church dissolved, and with its dissolution their history as French Huguenots ceases; but such names as Bowdoin, Sigourney, Dupuis, Faneuil, Brimmer, and Revere remind us of what they were as Bostonians.

The Scotch and Scotch-Irish did not assimilate with the English with the same readiness as the French Huguenots. Within a short time after their arrival they appear to have incurred the dislike of the English, and marriages between them occurred only among the lowest classes. It has been said that the Scotch had much in common with the Puritans, and their very presence in Boston during the seventeenth and eighteenth centuries is sufficient to prove this. Yet there were some differences which, for a long time, kept them from coalescing. The Scotch of the eighteenth century were very independent in their opinions, and they were rigid and formal in their religious observances even for their own time.

[1] "Scots' Charitable Society." Edition of 1878, p. 151.
[2] Winsor, "Memorial History of Boston," vol. ii, p. 250.
[3] Winsor, "Memorial History of Boston," vol. ii, p. 254.

Furthermore, according to Professor Perry,[1] any intimate relationship between the two peoples was prevented by the excessive dislike on the part of the Scotch for the use of water, either externally or internally. They may have been heedless of the first fault, but in their crowded church services it would certainly become evident to an English observer that they ranked cleanliness very far below godliness. The second weakness seems to have been recognized when the Scots' Charitable Society found it necessary to adopt the rule: "That no wine or strong drink be drunk at the charge of the charity of the Society, but beer or cyder only during the time of the meetting on Business."[2] Their assimilation, however, though deferred, was finally realized; and the fact that the Scotch Presbyterian church, established in 1729 on Long Lane (now Federal Street), is now the Arlington Street church, shows that this assimilation has been thorough.

The immigration from Ireland during the eighteenth century was not confined entirely to the Scotch. Some Catholic Irish, though probably a small proportion, also emigrated. In 1737, when an exceptionally large immigration into Boston took place, the Charitable Irish Society was organized. This society was formed by the Scotch-Irish, and it seemed to have been intended primarily, but not exclusively, for the assistance of their own brethren, as it was for some years a rule of the society that no Catholic should be eligible for office.[3] This rule would imply that there were some Catholic-Irish in the town at this time. And the following extract of March 20, 1732, from the *Weekly Rehearsal*, confirms this assumption: —[4]

"We hear that mass has been performed in town this winter by an Irish priest among some Catholics of his own nation, of whom, it is not doubted, we have a considerable number

[1] "Scotch-Irish in New England," p. 41.

[2] "Records of the Society," May 2, 1738.

[3] "Charitable Irish Society," Article 8 of the original records.

[4] This extract was called to my attention by Hon. Samuel A. Green of the Massachusetts Historical Society.

among us." How many "a considerable number" of Irish would be in the mind of a Bostonian of 1732 is entirely conjectural. It certainly must have been microscopic, as compared with the number which those words would imply at the present time. It is safe to assume, at least, that there were not a sufficient number to warrant the settlement of a priest in the town. There may have been a larger number at the middle of the century than there was after the Revolutionary War, for the population of the town as a whole was decreasing during that period. But nothing definite is known concerning their numbers, until the settlement in Boston in 1788 of their first priest, Father de la Poterie. At that time there were about one hundred Catholics in the town, about thirty of whom were Irish and the remainder French, Spanish, and Americans.[1] Strangely enough the Catholics were then meeting in the little French Huguenot church on School Street. In 1748 the Huguenots had sold this church with the express provision that it should be "for the sole use of the Protestants forever." It is one of the ironies of fate that this should have been the first church in Boston to be used for Catholic worship. The anti-Catholic sentiment, however, seems to have disappeared at this time; and in 1800, when the Catholics built their first church, the Protestants generally contributed toward it.[2]

In 1790, when the first national census was taken, the population of Boston was only 18,320, having hardly recovered from the effects of the war. The contour of the town followed very nearly the original shore line. The north end of the town, divided from the rest by Mill Creek (now Blackstone Street) was the most populous district.[3] At the first enumeration of the population in 1722, this small district contained 4549 persons, which was not quite one-half of the total

[1] See James Fitton, "Sketches of the Establishment of the Church in New England," pp. 80, 87.

[2] See James H. Stark, "Antique Views of Boston," p. 331.

[3] A special census of Boston taken in 1789 gives the population for various sections of the town.

population. In 1789 it was estimated to contain 5848 inhabitants,—about one-third of the whole. It now contains between eighteen and twenty thousand.

Although the North End had been the most desirable residential district, a part of the West End, and what is now Washington Street, were at this time occupied by equally well-to-do families.[1] There was no definite separation of nationalities, although the Scotch and Irish, both from their occupations and location, held on the whole a somewhat inferior social position. Wm. McKay, gentleman, lived on Fish Street (now North Street); but Wm. McNeil, rope-maker, living on Cow Lane, Fort Hill, was perhaps more nearly representative. Nearly all of the Puritan churches were located at the north end of the town, but the Scotch Presbyterian church was on Long Lane, and the new Catholic church was built on Franklin Street in the south-eastern part of the town. The negroes had their headquarters on Webster Avenue, until they moved to Belknap Street (now Joy Street) in the early part of this century.[2]

The population of Boston increased rapidly during the early part of the century. In the first quarter of the century it increased 133 per cent, from 24,937 to 58,281.[3] One of the most noticeable changes in the population was in the increasing proportion of males to females. The results of the war and the general business stagnation had left the proportion of females to males in 1790 as 121.86 to 100. By 1825 the number of females to 100 males was reduced to 101.78. Foreign immigration doubtless helped to effect this change, for during the early periods of immigration the males greatly outnumbered the females. Nevertheless, the chief factor in the change must have been the influx of persons from other parts of the United States.

[1] See the Boston Directory for 1789.

[2] See E. G. Porter, "Rambles in Old Boston, New England," p. 229.

[3] The increase in population, caused by the annexation of South Boston in 1804, may be practically disregarded, as it contained, according to Shurtleff, only ten families when annexed.

It is impossible to make an accurate estimate of the part which immigration played in the growth of Boston previous to 1820. That nearly all of the foreigners living in Boston in 1845 came after this time is shown by the fact that only eighty of the children of foreign parents were then over twenty years of age. Emigration to the west and other causes may have acted to reduce this class, however. For several years following the Revolution immigration into the country was small. Adam Seybert estimated that from the close of the Revolution to 1806 from four to six thousand persons per year emigrated to this country, and his estimate is accepted in the official returns. From 1806 to 1816 immigration was interrupted on account of the unfriendly relations existing between England, France, and the United States. At the close of the War of 1812 immigration began to assume greater proportions. It is estimated that from fifteen to twenty thousand per year arrived in this country between 1816 and 1820. Although this is not a large number compared with six hundred thousand, and even more, which have come in later years, it was remarkable for that period.

The extent of emigration appears to have alarmed some European countries and various devices were tried to lessen it. England, finding that emigration could not be stopped, endeavored to direct its course to her own colonies, but met with little success. The extensive immigration into the United States by way of British America seems to show that England's inducements to settle in her colonies were accepted by the emigrants only in part. In 1817 a British ship with 204 passengers on board, bound for St. Johns, N. B., arrived in Boston. The passengers not wishing to go to St. Johns overpowered the crew and brought the ship to Boston.[1]

Immigration during this early period was chiefly from the British Isles, Germany, and France; and it appears to have been of a very desirable kind. Many were farmers and artisans who were possessed of some means. They frequently

[1] *Niles' Register*, vol. xiii, p. 143.

brought their own implements with them, and tended to settle in the country, rather than in the towns. It required a considerable sum for a man to emigrate with his family at that time, and the very poor were thus excluded from coming. In 1816 a London paper said that the cost of passage to America was £10, each ship taking from fifty to eighty passengers.[2] After 1820 more assistance was given to emigrants, and occasional reference is made in *Niles' Register* to the arrival of destitute Irish passengers.

It was not long before European countries discovered this means of getting rid of certain undesirable elements. In 1832 Niles writes: "Many persons are leaving England for America, and several cargoes of paupers may be expected soon to arrive in the United States. Should we not return this compliment by sending a few cargoes of worn out negroes to England?"

According to the official returns the immigration from 1820 to 1826 amounted to only about ten thousand per year; but this figure is doubtless too small, for the returns at first were very imperfect. The immigration from 1830 to 1840, although varying from year to year, shows a fairly uniform rate of about sixty thousand per year. About three thousand per year during this decade and one thousand per year during the preceding decade came to the Boston port. We have no definite knowledge of the contribution which immigration made to the population of Boston previous to 1845; but it is possible to estimate it approximately. The censuses of 1820, 1830, and of 1835 give the aliens[1] in Boston as 1752, 3468, and 4606, respectively. Now the proportion of aliens to the total foreign population has been a steadily decreasing one, owing to the increase of female immigrants. From later censuses the general rate of this decrease may be ascertained, and then, by simple proportion, the roughly approximate

[1] *Niles' Register*, vol. x, p. 346.

[2] Aliens are foreign born males of voting age who have not been naturalized.

ratio of the aliens to the foreign born for the earlier periods.[1] This method makes the foreign population of 1820, 5161; of 1830, 11,381; of 1835, 15,883. There are two more ways of making estimates of the foreign population, which, though less direct, will give useful auxiliary figures. The foreign population of 1845, according to the census returns, was 27,104. Now this element may have grown at the same rate as the total population of the city, or it may have grown according to the rate of foreign immigration into Boston. Distributing this number according to the growth of the total population since 1810[2] would give a foreign population in 1820 of 5421, in 1830 of 13,362, in 1835 of 19,135, in 1840 of 20,599.

If distributed according to the rate of immigration into Boston since 1820, and assuming the foreigners in 1820 to be 5000, the foreign born would number 8536 in 1830, 12,073 in 1835, and 16,715 in 1840. In the second estimate, *i. e.*, according to the rate of increase of the total population, the figures for 1830 and 1835 are presumably too large, because the country people contributed to the growth of the city during these periods in greater proportion than the foreigners. And in the third estimate the figures for 1830 are presumably too small, for the official returns have been used for that period, which, as has already been said, are deemed unreliable. The first estimate, then, which gives intermediate figures, is the most nearly accurate. And it may be said that in round numbers there were about 5000 foreigners in the city in 1820, 11,000 in 1830, 16,000 in 1835, and 20,000 in 1840. These figures give a gradually increasing ratio of the foreign popu-

[1] The best proportion which I can get for this purpose is 1890 : 1875 : : 1845 : 1830, the actual figures being 16.55 : 19.38 : : 26.02 : [30.47]. From this the percentages in 1820 and 1835 are found to be 33.94 and 29, respectively. This is of course a rough estimate on the supposition that the decrease was regular. As later censuses have shown a fairly uniform decrease it seems necessary to use some figures slightly larger for earlier periods.

[2] There were, it is true, some foreigners in Boston before 1810; but, as has already been pointed out, the small number of persons of foreign parentage in 1845 who were over twenty years of age goes to show that there were very few before that time. At any rate it would not be safe to go back further than this in distributing the foreigners according to the growth of the city.

lation to the total population as follows: 1820, 11 per cent; 1830, 18 per cent; 1835, 20 per cent; 1840, 23 per cent. In 1845 they formed 24 per cent of the total population. In New York there were 128,492 foreigners in 1845, or 34 per cent of the total population; and in 1835, judging from the number of aliens, the foreigners formed about 21 per cent of the total population.

The most interesting period in the growth of Boston occurs after 1820. Between this time and the middle of the century Boston evidently saw successive tides of business prosperity and depression which effected its growth as in no other period of its history. The growth of the city by ten-year periods was comparatively uniform; but by five-year periods the growth fluctuated in the following curious manner: —

For 1820–25 the population increased				34	per	cent.
"	1825–30	"	"	"	5	" "
"	1830–35	"	"	"	28	" "
"	1835–40	"	"	"	8	" "
"	1840–45	"	"	"	34	" "

The conclusion which would first suggest itself from these figures is that either the city censuses were too large or the national censuses were too small, and certain proof cannot be given to the contrary. But a careful analysis of the returns shows that some fluctuation in the growth of the population during these periods actually took place.

There were certain indications that the early local censuses were not unduly large. In each of the years 1840, 1850, and 1855 two censuses were taken. In 1840 the national census was much larger than the city census, owing, as has been conclusively shown, to an error in the national census.[1] After correcting this error very little difference is found to exist in the results of the two censuses for any of the three years. The greatest discrepancy occurs in 1850, when the State

[1] See "Census of Boston, 1845," p. 7.

census exceeded the National census by 1907. This, however, makes less than 2 per cent difference in the growth of the population for the five years. In 1837 a special census was taken for the purpose of apportioning representatives. It would be supposed that of all the censuses this would be most apt to be excessively large. But it gives an increase which is only proportionate between the returns of 1835 and those of 1840.

Such rapid growths in the population as are indicated by the table could be made only by extensive migrations from the country. And a migratory population sufficiently large to account for the extraordinary growth of the city certainly existed, for in 1845 over 46,000 of the inhabitants of the city had been born in other parts of the United States. And it may be added that one-half of the inhabitants over twenty years of age were unmarried. Furthermore, business conditions were such as to attract the migratory population most strongly at those periods in which the city censuses were taken, and the business conditions were least attractive at about those years in which the national censuses were taken. This is indicated by the returns for the exports and imports, by the valuation of the property, and by the bank deposits and discounts for successive years.[1]

Such other statistics as are found in the censuses themselves tend to confirm the first figures which indicate irregular growths caused by migrations. First, it is significant that, during the periods of greatest increase, persons between the ages of 16 and 45 years (which would include the natural migratory age) increased more rapidly than the total population; and second, the males increased much more rapidly than the females. These facts are shown by the following table: —

[1] These may be found in the Appendix to the "Census of Boston, 1845."

Year.	Percentage of Total Population Between Ages of 16 and 45 Years.	Number of Females to 100 Males.	
		Total Population.	Between Ages of 16 and 45 years.
1820	51.56	106.99	104.16
1825	55.72	101.78	95.50
1830[1]	52.41	111.43	109.24
1835	56.86	103.58	98.09
1840[1]	52.68	108.02	110.65
1845	58.35	101.03	97.47

From 1820 to 1825 that part of the population between the ages of 16 and 26 years increased most rapidly; and from 1840 to 1845 the greatest increases occurred in that part of the population between the ages of 30 and 50 years. In both cases persons included in the ages mentioned formed about one-fifth of the population and contributed about one half of the increase. It will be seen that the most noticeable increases of males over females occurs between the ages of 16 and 45 years; but a considerable change takes place in the total population.

The only external evidence which bears upon this phenomenon is found in the number of the polls, which can be ascertained for each year.[2] The increases of the polls for the five-year periods, as will be seen by the following table, corresponds roughly to the increases of the population, and hence seems to confirm the facts given in the census returns: —

1820–25	the polls	increased	49.29	per	cent.
1825–30	"	"	10.94	"	"
1830–35	"	"	23.61	"	"
1835–40	"	"	9.31	"	"
1840–45	"	"	37.24	"	"

The increase of the polls, however, corresponds less closely to the increase of males of taxable age as given in the census reports. Throughout the entire period the polls show less

[1] The ages for these years are between 15 and 40, which would make the percentage of the total population a little too small. On the other hand, the number of females to 100 males is also too small, for their proportion to males between the ages of 40 and 50 is much larger than this.

[2] The polls are given on p. 59 of the Appendix to the "Census of Boston, 1845."

fluctuation in their growth, the chief difference being in 1830. This may indicate errors in the census reports; but it could account for only a part of the irregularity in the growth of the population. Shattuck, in remarking upon these peculiar fluctuations, says: "During the year 1825 many mechanics were required to make improvements near Faneuil Hall Market, and to build up portions of the city destroyed by fire."[1] Now, as the polls included only about two-thirds of the male population of corresponding age, it is quite possible that temporary residents of the city were enumerated in the censuses but were not taxed. If, however, allowance be made for errors in the censuses to the full amount indicated by the figures for the polls, there still remain considerable fluctuations in the population, which it seems evident is due to the migration of persons from the country to the city.

It is interesting to note that New York shows, though in less degree, similar fluctuations in the growth of its population during these periods: —

1820–25	New	York	increased	33	per	cent.
1825–30	"	"	"	21	"	"
1830–35	"	"	"	33	"	"
1835–40	"	"	"	15	"	"
1840–45	"	"	"	31	"	"

In 1845 we get for the first time an accurate idea of the composition of the population from the report of Lemuel Shattuck, a local statistician and genealogist, on the census of the city taken in that year by authority of the City Council. This census was much more exhaustive than any previous one had been, and it even touched upon a wider range of subjects than any succeeding census has done.[2] The foreign born, as has already been said, numbered 27,104 or 23.70 per cent of the population, and their children numbered 10,185. Although the foreigners had been increasing rapidly since 1840, this was not a comparatively large foreign population. The most noticeable feature in it was the num-

[1] "Census of Boston, 1845," p. 27.

[2] This report contains also a review of previous censuses of the city.

ber of inhabitants who were born in other parts of the United States. They numbered 46,186 and made up 40.38 per cent of the total population, exceeding by more than 5000 the total number of persons born in Boston. This suggests what the composition of the population may have been for those earlier periods which have already been considered. Shattuck remarks upon it as follows: —

"The facts confirm the truth of the remark often made, that a large majority of the active business men of Boston are from the country,— men who have come to this metropolis to seek their fortunes, bringing with them the economical habits, the industry, the energy, and the perseverance which are peculiar to the people of the interior towns of New England."[1] Although this element has since steadily increased in numbers, its proportion has decreased, until in 1895 it formed only 22.25 per cent of the total population. The fact which follows this is equally interesting. Only 30,891, out of a population of 114,366, were born in Boston of American parents. About two-thirds of these, moreover, were minors, showing that many of them were children of persons born in other parts of the United States, so that only 9.69 per cent of the population were old Bostonians of more than twenty years of age.

Important changes had taken place in the distribution of the population since the beginning of the century. The North End had long since lost its social prestige, and the eastern part of it was thickly inhabited by persons of foreign birth. The Fort Hill district also was beginning its decline, there being fewer American inhabitants here than in 1840. Beacon Hill perhaps was the most fashionable part of the city. The South End had then hardly become a popular residential section. The district in the South Cove and that in the West End near the north Union Station had just been filled in and made ready for occupancy.

[1] "Census of Boston, 1845," p. 37.

That part of the population born in the United States but not born in Boston were scattered pretty well throughout the city. They were most numerous in the West End, and they tended to occupy the same general district with persons of Boston birth, rather than with those of foreign birth.

The foreign population was found in the greatest numbers in the eastern part of the North End, which was ward 2, and in the eastern part of the Fort Hill district, which was ward 8. Wards 5 and 6 in the West End had the fewest inhabitants to a house (8.4), while wards 2 and 8, before mentioned, had the greatest number (17.79 and 19.15, respectively). A portion of ward 8, containing 3131 inhabitants, was much more densely peopled. The dwelling houses in this section, many of which had stores within them, contained on an average 37 persons. This is certainly an extraordinary condition of affairs. Shattuck could hardly have exaggerated when he said: "A more densely populated locality is scarcely to be found in any country." Ward 6, which is the most densely populated ward at the present time, contains only 15.03 persons to a house, being easily surpassed by two wards in 1845. The average number of persons to an occupied house for the whole city at that time (10.57) was greater than is that of any city in the United States at the present time excepting New York, which averages 18.52. Aside from this extreme overcrowding in certain sections, the general sanitary conditions were much worse than they are at the present time. Less than one-third of the houses in the city, and none of the houses in the North End, took aqueduct water; and many houses were not connected with the city sewerage system.

The places of birth of the foreign population are not given in this report; but in round numbers there were 30,000 Catholics in Boston in 1845, and from later figures it seems certain that 18,000 out of the 27,104 foreign born were Irish. From the immigration statistics the British Americans would appear to have been the next most numerous, and the English and the Germans come next with about equal numbers.

This is also the order in 1855, when the separation of nationalities is made for the first time in the census returns.

The year 1845 closes what may be considered to be the first period in the history of foreign immigrants in Boston. It includes the small and rather obscure beginnings of the eighteenth century, together with the somewhat larger and more regular additions which occurred in this century after the war of 1812. Before the next census was taken a migratory movement had commenced, which changed entirely the complexion of the population of this city and effected to a considerable extent the population of the entire country. This was the migration caused by the Irish famine of 1846. The immigration statistics tell the story of this movement for the country at large. The immigrants from Ireland for the decade 1830–40 numbered 207,381; for 1840–50, 780,719; and for 1850–60, 914,119. In the next decade their numbers drop to 435,788. The immigration was most marked at the ports of New York and Boston. In 1844 59,762 passengers arrived at New York; in 1850, 221,713; and in 1860, 111,-461. At Boston 6355 passengers arrived in 1844, 31,503 in 1850, and 8807 in 1860.

During the decade 1845–55, while the total population of the city was increasing 49 per cent, the foreign population increased 130 per cent, or in absolute numbers 35,253. This increase was very largely Irish, and probably up to 1850 it was almost entirely so. From 1845 to 1850 the increase in the foreign population made up the entire growth of the city, and, indeed, even more, for the American population in those years decreased 2.27 per cent. During this period of immigration the physical condition of the inhabitants had been growing worse rather than better. A change in the ward lines, which occurred in 1850, makes it impossible to compare the conditions of various sections in 1855 with those of 1845; but the average number of persons to a house for the city had increased somewhat. The census reports are very suggestive of the tenement conditions existing at this time. George Adams, who had charge of the census of 1850,

mildly remarks: "Permit me to suggest that it is desirable to discontinue as far as possible *cellar* residences. These places are damp and poorly ventilated; they are regarded by medical men and others as unhealthy, increasing the amount of disease and death among the occupants, and as the sources of contagion which spread to other portions of the city."[1] A more vigorous protest is made by Dr. Josiah Curtis in 1855. In calling attention to the death rates in the different wards, which varied from 1.44 per cent in the West End to 3.07 in the North End, he said: "No one will be surprised at these facts who will take the trouble to visit the abodes, many of them cellars, and nearly all crowded with a dying mass of human beings, which occupy the low land, much of it redeemed from the water, that lies in the northerly, easterly, and southerly sections and suburbs of Boston. They are equal to anything we have ever been able to discover in European cities."[2]

By 1855 the foreign born had become more numerous in the North End and in a part of the South End, where they displaced the Americans. In 1850 there was shown to be an increase of inhabitants even in ward 8, but a slight decrease had occurred in ward 2. In the South Cove and in the adjacent district of the South End the foreign born more than doubled their number between 1845 and 1850. Three Catholic churches were erected or purchased within five years to accommodate the Catholic-growing population of this locality.[3] The greatest increase of population, both native and foreign, however, occurred in the outlying districts — South Boston, East Boston, and the extreme South End. It was during this period that the Americans moved from the more crowded sections in the eastern part of the city. The movement of the population is well illustrated by the changes which had to be made in the city directory. The compiler of the directory for 1853 writes: "A great change has taken place in Boston during the last five years of our directory

[1] "Census of Boston, 1850," p. 15.
[2] "Census of Boston, 1855," p. 58.
[3] See Winsor, "Memorial History of Boston," vol. iii, pp. 528, 530.

experience. The number of names erased in that time is 48,147, and the number added is 56,207." These were double the number of changes which had occurred in any five years previous to the Irish famine.

The growth of the more important nationalities from this time on may readily be seen by referring to the chart. The curves refer in each period to the present territory of Boston.

The growth of the foreign elements since 1855 shows no such remarkable feature as it did previous to that date, as will be seen by the accompanying table, which represents the growth of the city and of the suburbs for five-year periods since 1850. Although the absolute increase in a decade has been as great in two instances, since then the percentage of increase has of course been much less. During the Civil War there was only a very small increase, whether in the foreign elements or in the total population; but from 1865 to 1875 there was a marked increase in all the nationalities. The actual increase was 35,877, which was somewhat larger than during the previous Irish immigration, yet the percentage was only 41, as compared with 130 for the previous period. The entire population of the city increased 27 per cent in the same time.

From 1875 to 1880 the total foreign population actually decreased by 5.8 per cent, and nearly all the various nationalities, excepting the British Americans, decreased. This is the only period of actual decrease in the foreign population, and it is difficult to say whether it was caused by emigration

Years.	Actual Increase of City.	Percentage of Increase of City.	Percentage of Increase of Foreigners.	Percentage of Increase of Suburbs.[1]
1850–55	33,920	18.55	.....	.....
1855–60	30,790	14.21	3.19	26.15
1860–65	21,157	8.53	3.60	9.83
1865–70	21,223	7.90	13.66	33.06
1870–75	52,070	17.96	24.57	23.98
1875–80	20,920	6.12	—5.88	11.19
1880–85	27,554	7.59	16.11	19.38
1885–90	58,084	14.88	18.66	26.15
1890–95	48,443	10.80	14.05	25.42

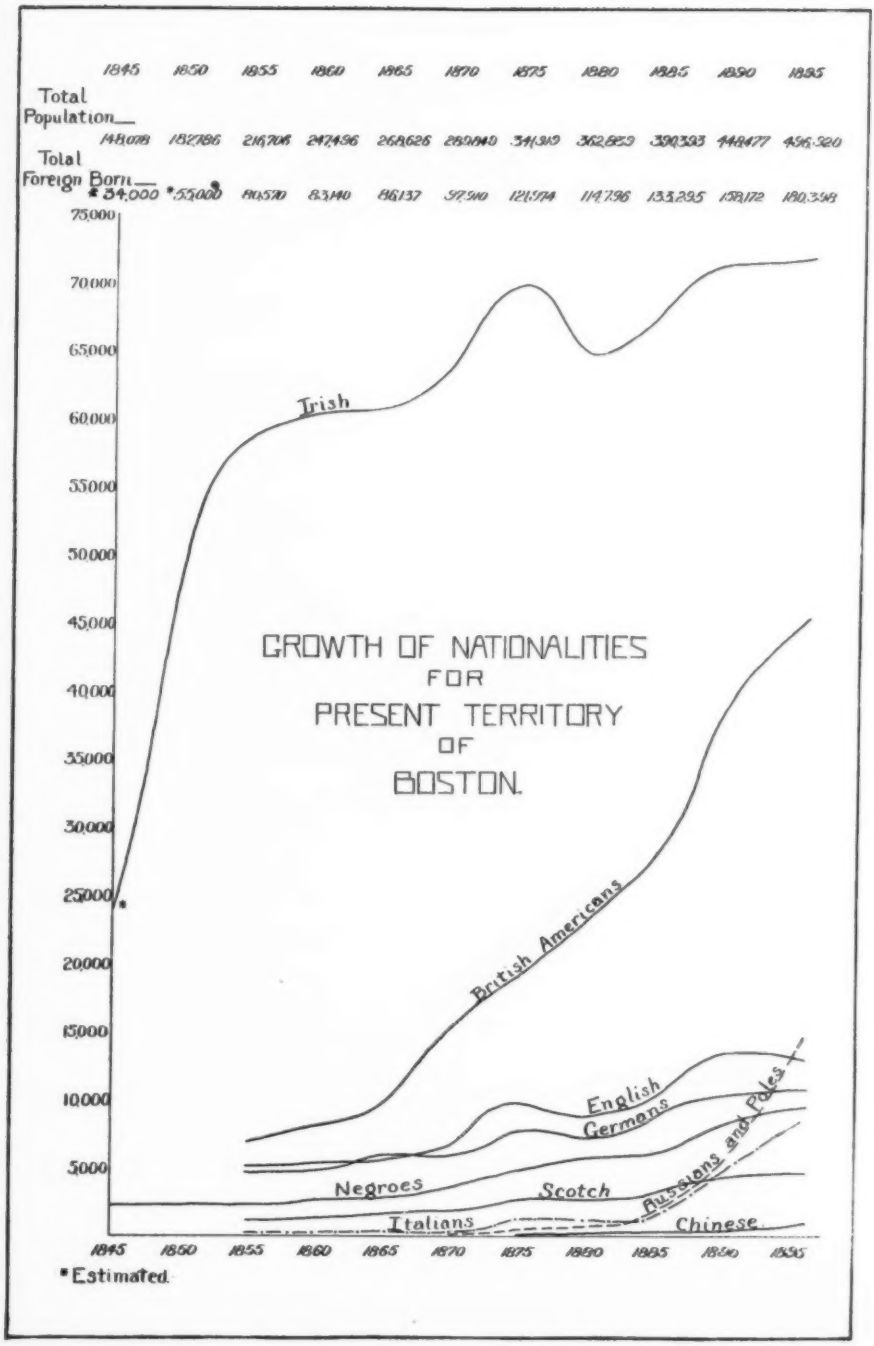
[1] The suburbs are those within a radius of eight miles of the State House and include Cambridge, Chelsea, Everett, Malden, Medford, Somerville, Arlington, Belmont, Brookline, Melrose, Revere, Watertown, Winchester, and Winthrop.

or by a decrease in immigration. The total immigration into the country fell off from 450,000 in 1873 to 120,000 in 1878, and it is quite possible that the immigration into Boston should have fallen so low that the death rate was sufficient to bring about this reduction in five years. But more or less emigration is taking place continually, and probably the decrease should be accounted for partly in this way, especially in the case of the Irish, who decreased 7.2 per cent during that time. A large increase in the foreign population has again occurred during the last decade. This in numbers surpasses the increase of any previous decade, but the proportion is less, being 35 per cent. The increase was greater between 1885 and 1890 than between 1890 and 1895.

The growth of Boston's suburbs, especially within recent years, has been closely associated with the growth of the city. It will be noticed from the table that the greatest growths of the suburbs have usually taken place contemporaneously with the greatest growths of the city. The population of the suburbs given in the table is 290,902, which makes the gain of 25.41 per cent for the last period 58,956, or 10,513 more than the growth of Boston for the same time; and during the last decade their growth has exceeded by 519 the growth of Boston for the same period. It might be supposed that in the suburbs at least the population would be pretty thoroughly American; but during the last ten years the foreign born in these suburbs increased 77 per cent, leaving 31 per cent of their population foreign born, as against 36 per cent in the city.

For the last forty years the growth of Boston itself has been confined chiefly to the outlying districts. Since 1845 Roxbury has grown from 13,929 to 92,088, South Boston has grown from 10,020 to 67,913, and East Boston from 5018 to 39,889. But that part of the peninsula which lies north of Pleasant Street has decreased in population from 80,967 to 67,963.[1]

[1] The territories compared here are not identical; but the figures for the present time apply to a slightly larger area, hence the actual decrease has been somewhat greater than this.


1845 1850 1855 1860 1865 1870 1875 1880 1885 1890 1895
Total Population
148,078 182,786 216,706 247,496 268,626 289,040 341,919 362,829 390,393 448,477 496,920
Total Foreign Born
*34,000 *55,000 80,570 83,140 86,137 97,540 121,974 114,736 133,295 158,172 180,398
75,000
70,000
65,000
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
Irish
GROWTH OF NATIONALITIES FOR PRESENT TERRITORY OF BOSTON.
British Americans
English
Germans
Russians and Poles
Negroes
Scotch
Italians
Chinese
1845 1850 1855 1860 1865 1870 1875 1880 1885 1890 1895
*Estimated.

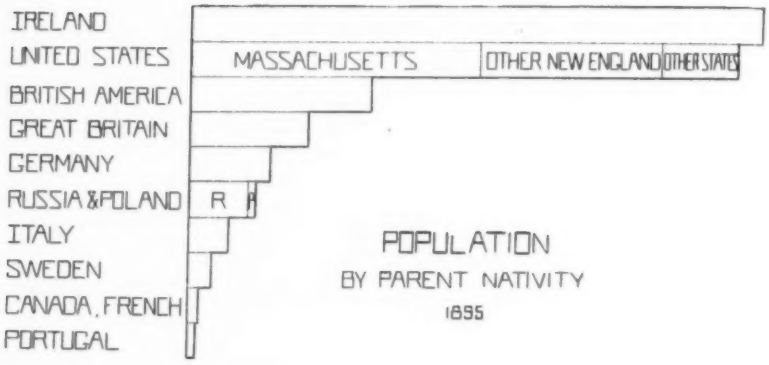
GROWTH OF THE LEADING NATIONALITIES SINCE 1855 FOR THE PRESENT TERRITORY OF BOSTON.

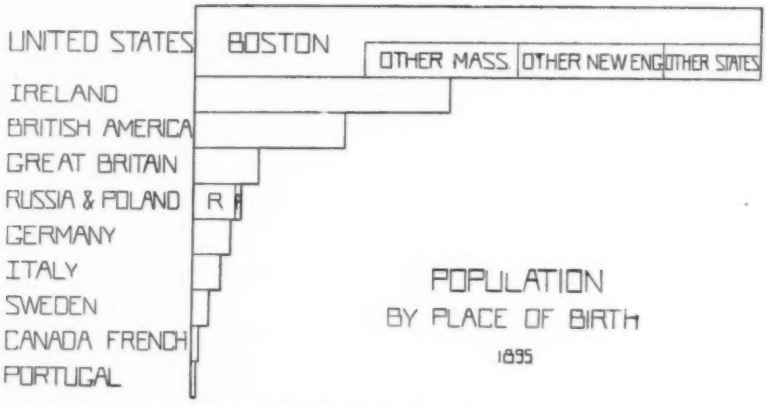
	1845.	1850.	1855.	1860.	1865.	1870.	1875.	1880.	1885.	1890.	1895.
Irish	24,000[1]	.....	58,440	60,431	60,855	63,953	69,819	64,793	67,745	71,441	71,571
British Americans	.....	.....	6,977	8,187	9,717	15,147	19,924	23,156	27,779	38,294	44,202
English	.....	.....	5,154	5,495	5,746	6,650	9,849	8,998	10,197	13,454	13,298
Germans	.....	.....	4,814	4,914	5,919	5,998	7,839	7,396	8,810	10,362	10,904
Negroes	2,160	2,323	2,369	2,584	2,643	3,728	4,969	5,873	6,058	8,125	9,472
Scotch	.....	.....	1,311	1,421	1,565	1,955	2,841	2,662	3,193	4,490	4,690
Italians	.....	.....	252	249	393	281	1,280	1,277	2,378	4,718	7,900
Russians and Poles	.....	.....	.....	.....	.....	266	515	782	1,854	5,259	13,200
Chinese	.....	.....	.....	.....	.....	.....	39	133	268	444	805

[1] Estimated.

The composition of the population has undergone a marked change since 1845. Of the four elements of the population given at that time, those born in other parts of the United States ranked first, those born in Boston of American parentage second, the foreign born came next, and the children of foreigners last. The increase of the foreign born was so rapid after the Irish famine, however, that soon after 1850 the foreigners and their children outnumbered the Americans. The children of foreigners then formed only a small part of the population. But after 1855 they increased so rapidly that in 1880 they were the most numerous element of all. A more rapid immigration since 1880 has now put the foreign born in the lead, and the order is as follows: The foreign born rank first, the children of foreigners second, persons born in other parts of the United States come next, and the old Bostonians are last.

The proportion of the various nationalities has also changed within recent years. Since 1875 the Irish have increased but little by immigration. The number of the Scotch also has remained almost stationary. But the British Americans, a large number of whom are of Scottish blood, have kept up a steady and rapid increase from the beginning. Since 1880 both the Italians and the Russian and Polish Jews have shown remarkable growths, but neither has increased so rapidly as the British Americans at certain





NUMBERS OF THE LEADING NATIONALITIES IN 1895.

	By Place of Birth.	By Parent Nativity.
Boston	205,932	84,282
Other Massachusetts	42,969	
Other New England	40,500	52,318
Other States	27,121	22,035
Ireland	71,571	166,301
British America	42,367	52,390
Great Britain	18,311	34,067
Russia and Poland	11,979 + 1,221 = 13,200	17,277 + 1,965 = 19,242
Germany	10,904	23,441
Italy	7,900	11,473
Sweden	4,891	6,749
Canada, French	1,835	2,711
Portugal	1,215	2,128

periods, and they in turn have never approached the rate of increase of the Irish from 1845 to 1855. The Swedes have been increasing steadily since 1870, but they still form an insignificant part of the population, numbering only 4891. The types of certain nationalities have also varied somewhat. The Italians, who were at first chiefly Genoese or Northern, are now commonly from Southern Italy. Among the Jewish immigrants the Germans were at first most common, but now, although the Jews came from all parts of the world, including the isles of the sea, the Russians are the prevailing type.

The increasing numbers of the children of foreigners makes the parent nativity of chief importance in estimating the influence of immigration. The progress of persons of foreign birth, and also those of foreign parentage, in the population has been as follows: —

	1845.	1855.	1880.	1885.	1890.	1895.
Percentage of foreign born of the total population	23.70	38.88	31.63	34.14	35.26	36.30
Percentage of foreign parentage of the total population[1]	32.61	52.98	63.56	67.02	67.96	70.65
Percentage of foreign born of foreign parentage	72.68	72.92	49.77	50.94	51.89	51.38

Between 1880 and 1890 the foreign born increased more rapidly than the native children of foreign parents, thereby regaining predominence. Immigration has increased somewhat within recent years, and it is probable also that a larger number of immigrants are single persons. At least the birth rate among the foreign elements has been decreasing. It is difficult to get accurate statistics concerning the births, but by actual enumeration in 1850 the Irish were found to be increasing 5.23 per cent, the Germans 5.64 per cent, and other foreigners 5.96 per cent. In 1845 the Irish in the most densely inhabited part of Boston were found by actual enumeration to be increasing 6.77 per cent. Although

[1] One or both parents.

this appears to have been the highest birth rate of any district in the city, Shattuck remarked: "This prodigious fecundity of our foreign population generally prevails throughout the city."

Persons of foreign parentage (one or both parents) then at the present time form 70.65 per cent of the total population, and a little over one-half of this number is of foreign birth. A comparison of the chief nationalities by parent nativity[1] is made in the accompanying diagram, and a similar diagram showing the same nationalities by place of birth is also given for comparison. The nationalities given in the diagrams represent 96 per cent of the total population in case of the parent nativity, and 98 per cent of the total population in case of the place of birth. It has already been shown that those nationalities which immigrated first, and which for a long time formed almost the entire foreign population have now become less important on account of the recent rapid growth of nationalities from southern and eastern Europe. In the comparison of parent nativities, however, it will be seen that the older nationalities still retain their predominance. The Irish have always been the most numerous of all the foreign elements, but they show an even greater predominance in comparing the parent nativities. They are not merely the largest of the foreign nationalities; but they are the largest single element in the city, surpassing by 7666 the Americans born in any part of the United States. In 1885 it appears that the Irish element exceeded the American by about twice the amount of the present excess. Persons of Irish parentage now make up 47.37 per cent of the population of foreign parentage; and they compose one-third of the inhabitants of the city.

[1] In disposing of persons of mixed parentage, in the comparison of parent nativities, I have not followed the parentage of the father nor that of the mother exclusively, but have divided them equally between the two nationalities to which the parents belonged. For instance, there were 2360 persons whose fathers were born in Ireland and whose mothers were born in Great Britian; and there are 3075 persons whose mothers were born in Ireland and whose fathers were born in Great Britian. I have therefore credited 2717 to each nationality, and have proceeded thus with every case of mixed parentage.

In comparing the earlier with the later nationalities it will be noticed that a considerable difference occurs in the relative sizes of the first and second generations. With the Irish and the Germans the second generation is the larger, persons of foreign birth forming only 43.03 per cent and 46.51 per cent, respectively, of those elements. With the British Americans, who are largely single persons, the foreign born form 80.87 per cent of the total number of foreign parentage. Between these extremes are found the Italians, and the Russian and Polish Jews, but apparently time is the only thing lacking to enable either to produce a numerous offspring. At present the foreign-born Italians form 68.85 per cent of the Italian element, and the foreign born among the Russian and Polish Jews form 68.60 per cent of that element. The only change in the order of nationalities between the place of birth and the parent nativity is for the Germans. They precede the Russians and Poles when the parent nativity is compared. And the Americans, of course, rank first when the place of birth alone is considered.

It is interesting to note that there are more persons who were born in "other States" (*i. e.*, States outside of New England) than there are persons whose parents were born in other States. The former number 27,121, and the latter 22,035. This indicates a second migration on the part of many families. Of the Americans who migrate to Boston the number having foreign parents is exceptionally large in case of persons from other States, and this is probably sufficient to account for the difference. The same thing was true in 1885.

Since 1845 the residential districts of the city have been modified in various ways. Next to the enlargement of the city's area the most noticeable change is in the increase of territory devoted entirely to business. Fort Hill was levelled in 1867, and with it the most objectionable tenement district in the city was destroyed. This section no longer contains dwelling houses. A further destruction of objectionable

tenements has been made recently in the South Cove by the erection of the new Union Station.

The movement of the population has been to the south and the west. The rapid influx of foreigners during the middle of the century caused a large number of Americans to settle in the South End, which was then a new section. It is related that in 1850 the manager of a Boston weekly refused to deliver his paper south of Dover Street, because it was so far away; and he delivered it on the street only because it was such a "popular street." Ministers and other professional men lived on Dover Street, then considered very desirable. Persons who are acquainted with that district at the present time will realize how great a change has taken place in the character of its inhabitants. Continued immigration caused an overflow of the foreign born, chiefly British Americans and Irish, into the South and West Ends, and when the streets of the Back Bay were opened in 1872 they were quickly occupied by American inhabitants of those districts.

The North End now contains the largest number of foreign born of any part of the city. Ward 6, which has the largest number of inhabitants of any ward, is the only one which contains a larger foreign than native-born population. And the native born, which comprise 43.18 per cent of the inhabitants of the ward, are largely the children of foreigners. Next to the North End ward 8 in the West End and ward 7, which includes the South Cove, contains the largest proportion of foreign born. Nearly as large proportions are also found in ward 13 in South Boston, and ward 2 in East Boston. The density of the population follows pretty closely the distribution of the foreign born. The North End is much the most densely peopled part of the city. Ward 6 contains on the average 1.23 persons to a room.[1]

Persons born in the United States but not born in Boston are a less important factor in the population than formerly, but in some parts of the city they form a majority of the

[1] See "Massachusetts Census of 1895."

native born. There are very few of this class in the North End or the West End. A somewhat larger number are found in the lodging houses of the South End, but they are most numerous in this district a little farther south than the population of 1845 extended.[1]

A general comparison now of the populations of several large cities will disclose how far the population of Boston has marked peculiarities, and will enable us to understand better the significance of its growth. The earliest comparison which can be made is for 1860, and the latest is for 1890.

In 1860 —

34 per cent of Boston's population was foreign born.[2]
47 " " " New York's " " " "
30 " " " Philadelphia's " " " "
25 " " " Baltimore's " " " "
45 " " " Cincinnati's " " " "

In 1890 —

35 per cent of Boston's population was foreign born.
42 " " " New York's " " " "
26 " " " Philadelphia's " " " "
16 " " " Baltimore's " " " "
24 " " " Cincinnati's " " " "

Boston, then, is the only one of the five cities which had a greater percentage of foreign born in 1890 than in 1860. This means that a relatively larger number of Boston's foreign born has come from recent immigration, for its total population has grown nearly as rapidly as that of the other

[1] The figures showing the number of persons born in the United States but not born in Boston for each ward in the city have been kindly furnished by the Massachusetts Bureau of Statistics of Labor. As they do not appear in the regular census reports they are herewith appended. The native born and foreign born, by wards, may be found in the last State Census Report, vol. i, p. 862.

Ward 1, . . 4,479	Ward 10, . . 9,757	Ward 18, . . 4,147
" 2, . . 2,723	" 11, . . 6,796	" 19, . . 2,661
" 3, . . 2,388	" 12, . . 9,687	" 20, . . 5,457
" 4, . . 3,465	" 13, . . 2,032	" 21, . . 6,275
" 5, . . 3,024	" 14, . . 3,415	" 22, . . 4,640
" 6, . . 2,085	" 15, . . 2,912	" 23, . . 3,860
" 7, . . 3,727	" 16, . . 3,434	" 24, . . 5,110
" 8, . . 4,502	" 17, . . 3,703	" 25, . . 4,467
" 9, . . 5,844		

[2] This again is for the present territory of Boston. The percentage would have been 36 for the territory which Boston included in 1860.

cities and its foreign population has grown much more rapidly. The fact is clearly shown in the following table which gives the increases of the total population and of the foreign born during the thirty years: —

	Total Population.	Foreign Born.
Boston	81 per cent	90 per cent
New York . . .	86 " "	66 " "
Philadelphia . .	85 " "	59 " "
Baltimore . . .	106 " "	31 " "
Cincinnati . . .	84 " "	—3 " "

Boston, again, is the only city in which the foreign born have increased at a greater rate than the total population. In Cincinnati there has been an actual decrease of 2206 in the foreign born since 1860. The exceptional growth of the population of Baltimore is partly due to the annexation of territory.

Boston did not have an exceptionally large proportion of foreign born in 1860, although the Irish, the greater part of whom had come since 1846, formed 72 per cent of the foreign population. Before the Irish immigration had spent itself, a German immigration had begun, which surpassed that of the Irish between 1850 and 1860 and contributed largely to the growth of many cities. The contributions which the various nationalities have made to the population of the United States, and to that of the several cities for the two periods, are illustrated in the accompanying tables.

In 1860 the Irish was the leading nationality in New York and Philadelphia, as well as in Boston, while the Germans led in Baltimore and Cincinnati. In New York the Irish made up only 53 per cent and in Philadelphia only 56 per cent of the foreign population, while the Germans in Cincinnati formed 59 per cent and in Baltimore 62 per cent of the foreign born. Hence, Boston had a larger proportion of her foreign population composed of a single nationality. In 1860 the first six nationalities were much more uniformly represented in the several cities, and corresponded more closely

TABLES SHOWING THE ORDER OF THE CHIEF NATIONALITIES IN THE UNITED STATES AND IN THE SEVERAL CITIES FOR 1860 AND 1890.

TABLE I.—1860.

United States.	Boston.	New York.	Philadelphia.	Baltimore.	Cincinnati.
1. Ireland.	1. Ireland.	1. Ireland.	1. Ireland.	1. Germany.	1. Germany.
2. Germany.	2. British America.	2. Germany.	2. Germany.	2. Ireland.	2. Ireland.
3. England.	3. England.	3. England.	3. England.	3. England.	3. England.
4. British America.	4. Germany.	4. Scotland.	4. Scotland.	4. Scotland.	4. France.
5. France.	5. Scotland.	5. France.	5. France.	5. France.	5. Scotland.
6. Scotland.	6. France.	6. British America.	6. Switzerland.	6. Holland.	6. British America.
7. Switzerland.	7. Atlantic Islands.	7. Russia and Poland.	7. British America.	7. Italy.	7. Switzerland.
8. Wales.	8. Italy.	8. Switzerland.	8. West Indies.	8. British America.	8. Holland.
9. Norway.	9. Sweden.	9. Austria.	9. Wales.	9. West Indies.	9. Wales.
10. China.					
11. Holland.					

TABLE II.—1890.

1. Germany.	1. Ireland.	1. Germany.	1. Ireland.	1. Germany.	1. Germany.
2. Ireland.	2. British America.	2. Ireland.	2. Germany.	2. Ireland.	2. Ireland.
3. British America.	3. England.	3. Russia and Poland.	3. England.	3. Russia and Poland.	3. England.
4. England.	4. Germany.	4. Italy.	4. Russia and Poland.	4. England.	4. Russia and Poland.
5. Sweden.	5. Russia and Poland.	5. England.	5. Scotland.	5. Bohemia.	5. British America.
6. Russia and Poland.	6. Italy.	6. Austria.	6. Italy.	6. Austria.	6. France.
7. Norway.	7. Scotland.	7. Hungary.	7. British America.	7. Italy.	7 Italy.
8. Scotland.	8. Sweden.	8. Scotland.	8. France.	8. Scotland.	8. Scotland.
9. Italy.	9. Portugal.	9. France.	9. Austria.	9. British America.	9. Switzerland.
10. Denmark.	10. France.	10. British America.	10. Switzerland.	10. France.	10. Austria.
11. Austria.	11. Norway.	11. Bohemia.	11. Sweden.	11. Sweden.	11. Holland.
12. Bohemia.	12. China.	12. Sweden.	12. Norway.	12. Switzerland.	12. Wales.
13. France.					
14. China.					

to the order in the United States than in 1890. The Atlantic islands and the West Indies were formerly of some importance among the foreign countries represented in the cities. A noticeable number of Russians and Austrians were to be found in New York, and a few Italians in Boston and Baltimore as early as 1860. It will also be noticed that a relatively smaller number of Norwegians and Welsh, and a greater number of Scotch, were to be found in the cities than in the country at large.

A great change has taken place in the order of nationalities in the United States since 1860 as well as a considerable increase in the number. Ireland and Germany have changed places, and the same thing is true of England and British America. France, Switzerland, Wales, and Holland have become unimportant. Among the more recent immigrants the Swedes and the Russians and Poles are very numerous. The Italians, Danes, Austrians, and Bohemians are also important, though much less so than the Swedes and the Jews. The Jews, Italians, and French are relatively more numerous in all these cities than they are in the country as a whole, while the opposite is true of the Swedes, Norwegians, and Danes.

The most important changes in the cities have occurred in New York and Baltimore, where the more recent immigrants have attained special prominence. In New York the Germans have taken precedence over the Irish, while the Jews and Italians hold third and fourth places. The Austrians, Hungarians, and Bohemians are also numerous. Similar changes have occurred in Baltimore. The Bohemian settlement is surprisingly large here, but the Italians are relatively less important than they are in New York or Boston. Hungary, it will be seen, is represented in New York alone. The increase of the Jews and the Italians is the most noticeable change in all the cities, and in Boston it is the only change of importance. The order of the first four nationalities has remained the same here as in 1860. A large number of

British Americans and a small number of Germans have always been characteristics of the population of Boston. It will be noticed also that Boston is the only one of the five cities in which the Portuguese are represented, and the only one in which the Austrians are not represented in the first twelve nationalities. On the whole the population of Baltimore resembles that of New York, while the populations of Boston and Cincinnati are more nearly like that of Philadelphia.

The comparative influence of immigration upon these cities is shown by the following table, which gives the percentage of persons of foreign parentage (one or both parents) to the total population. A few other cities having a large percentage of persons of foreign parentage are added to those already considered.

Boston . .	67.96 per cent.	Milwaukee .	86.36 per cent.
New York .	80.46 " "	Chicago . .	77.90 " "
Philadelphia .	56.58 " "	Fall River .	82.71 " "
Baltimore .	41.67 " "	Lawrence .	79.88 " "
Cincinnati .	68.97 " "	Holyoke . .	82.98 " "

Milwaukee has the largest percentage of persons of foreign parentage in its population of any city in the United States. Some of the manufacturing cities of Massachusetts, however, have almost as large proportions. In 1895 in Fall River persons of foreign parentage formed 85.71 per cent of the population. By referring to the table showing the percentages of foreign born, it will be seen that Cincinnati has a much greater proportion of persons of foreign parentage than of foreign birth owing to the slight immigration of foreigners to that city during recent years. The same thing is true, to a less degree, of Baltimore and Philadelphia. In all these cities the native children of foreigners outnumber the foreign born.

It would be desirable to analyze further the population of these cities in order to ascertain the number of persons of native parentage who were born in other parts of the United

States; but, with the exception of Boston, this cannot be done except insofar as they were born in other states.

In 1860 of the native born in —

Boston	. .	24 per cent were born in other states.
New York	.	12 " " " " " " "
Philadelphia		12 " " " " " " "
Baltimore	.	9 " " " " " " "
Cincinnati	.	25 " " " " " " "

In 1890 of the native born in —

Boston	. .	22 per cent were born in other states.
New York	.	16 " " " " " " "
Philadelphia		14 " " " " " " "
Baltimore	.	12 " " " " " " "
Cincinnati	.	18 " " " " " " "

This seems to indicate that in the case of Boston there is a particularly large migration from the country to the city. It has been, however, a decreasing proportion in both Boston and Cincinnati. This element, composed of persons from other parts of the United States, contributes towards a large floating population, which resides in boarding and lodging houses, and which forms in Boston a very noticable part of the population. It is an interesting fact that in 1890 the number of boarding or lodging-house keepers in Boston numbered 1360; in New York, 1569; in Philadelphia, 1014; in Baltimore, 557; and in Cincinnati, 267. And in 1895 there were 44,926 lodgers and 9496 boarders in Boston.

A final interesting analysis of the population may now be made which will give some approximation to the old American inhabitants of the city. The following table gives the percentage to the total population of the native white of native parentage who were born in the State: —

Boston	. .	19.83 per cent.	Milwaukee	.	9 23 per cent.
New York	.	13.78 " "	Chicago	. .	9.03 " "
Philadelphia	.	33.85 " "	Fall River	.	12.68 " "
Baltimore	.	37.36 " "	Lawrence	.	10.55 " "
Cincinnati	.	20.98 " "	Holyoke	. .	10.34 " "

The proportion of the population born in the city named would of course be considerably less; for instance, the proportion in Boston would be reduced to 14 per cent. To illustrate the meaning of the above table in round numbers, take the case of Milwaukee, which has a population of 204,468. Deduct the foreigners of two generations, the negroes, and persons who have emigrated there from other states, and it would have a population of only 18,890. This reduction for the city of New York would cause a diminution in its population of 1,306,519. The same operation would make Chicago a city of about the size of Worcester, Mass. Philadelphia, under these conditions, would be much the largest city in the United States, with a population of 354,450. Take from Boston the foreigners and their children, together with those persons who were born outside the city, and her population would be reduced to about 64,000.

From this brief comparison it may be concluded that the foreign element in Boston, considering either the place of birth or the parent nativity, is not remarkably large, although it is perhaps greater than the average. Thirteen of the fifty principal cities of the United States have a larger proportion of persons of foreign parentage than Boston has. But some allowances should be made in the case of every city for peculiar tendencies due to size and location. In the number and variety of nationalities the population of Boston presents few striking peculiarities. Its chief characteristic — the large number of British Americans — tends to simplify the problem of assimilation, for now the three largest nationalities are, at least, English-speaking. The few nationalities in Boston which were not represented in the other cities are numerically of small importance. Boston cannot be compared with other cities in every phase of her growth, but it is noticeable that the growth of the foreign born has been more recent here than in the other cities analyzed. This means a relatively smaller number of native children of foreigners than is the case with many cities, and it has also

one other consequence. It has already been noted that formerly in Boston an exceptionally large proportion of the foreign born were composed of a single nationalty,— the Irish. This is no longer true; but persons of Irish parentage do form an unusually, though not an exceptionally, large proportion of the population of foreign parentage. It may also be added that the migration from country to city has been unusually large in the case of Boston. With these exceptions, it still remains true that Boston is fairly representative, at least for a northern city. The peculiarities in its population are really of minor importance. And it seems probable that the chief phenomena connected with the growth of Boston are in the main similar to those of other American cities.

WAGE STATISTICS IN THEORY AND PRACTICE.

By Roland P. Falkner.

"Consumption and production, wages, prices charged by mechanics, small traders, carriers, etc., are susceptible only of estimates."[1] This dictum of Meitzen, particularly in its application to wages, has been a stumbling block to several writers. Yet it is, from a theoretical point of view, true in the vast majority of cases; and if we would understand the nature of wage statistics and their limitations we cannot do better than study this statement.

The author is opposing statistics and estimates, and this contrast is rigorously upheld by continental authorities.[2] The essence of the distinctions is that "statistics," properly so-called, embrace directly *all* the phenomena within a given field, while all partial enumerations are estimates. For example, if the problem were to discover the wages of carpenters in Pennsylvania we should have "statistics" when we had combined, in whatever fashion, records of the wages of every carpenter in the State. Anything less than this, such as the choice of representative workmen in representative localities, might, indeed, give us very interesting figures capable of throwing much light upon the subject; but these figures would be "estimates" not statistics. In short, Dr. Meitzen does not pretend that every record of wages paid to individuals, such as appears in the monographs of the Le Play

[1] *History, Theory, and Technique of Statistics*, by August Meitzen, translated by R. P. Falkner, p. 183.

[2] In a somewhat similar discussion at the meeting of the International Institute at Bern, 1895, Professor Rauchberg of Prague voiced an opinion which I found to be very general when he said: "We must distinguish between statistics comprising the totality of cases and those which consider only types arbitrarily chosen. If we confine ourselves to the latter, the results will serve only for that part of the whole which these types represent, and they may not be adapted even to this. As to which of these this principle is preferable no one can be in doubt . . . the first system is statistics, the other is not" (*Bulletin de l'Institut International de Statistique*, 1896, vol. ix, part ii, p. xcv). Dr. Rauchberg informed the writer at that time that the Austrian Bureau had in contemplation wage statistics, and that they proposed to carry their principle into practice by securing the wages of every workman in each class in any geographical region to which the figures might relate.

School, and even in somewhat larger fields of observations, are estimates, but that what are generally called statistics of wages, which pretend to give the wages in a given industry in Great Britain or any larger geographical unit, are estimates. To take an illustration nearer home, the wages recorded in the Aldrich Report are not estimates, but they are not statistics; hence their combination to give a general view of the course of wages in the United States is an estimate. When in the last issue of these publications Mr. Bullock cites the work of Mr. A. L. Bowley to refute the erroneous opinion of Meitzen he only supports the latter, for Mr. Bowley's excellent study of "Changes in Average Wages in the United Kingdom"[1] is based upon statements of wages paid in particular localities.

To push the distinction between theory and practice to the point of declining to speak of wage statistics does not seem to me under ordinary circumstances a very profitable undertaking. Language is ever stronger than the theorist, and so long as everybody continues to speak of statistics of wages it would savor of pedantry to insist that they were not in fact statistics at all but mere wage records. Yet if there is a distinction between the requirements of strict statistical theory and the methods employed in obtaining results, which statisticians and economists regard as satisfactory, it imports to know what the distinction is and just how far it furnishes a criterion of judgment which enables us to reject certain results as inadequate and accept others as satisfactory.

Statistical inquiry into wages has concerned itself with two things,— the wages at a given period and the course of wages.[2]

[1] *Journal of the Royal Statistical Society*, 1895, pp. 233.

[2] Insistence has been laid by some writers, notably Mr. Wright, on the advantages of the classified wage table. As we shall hereafter deal almost exclusively with average wages it may be well to point out here how they are related. In actual wages we may be interested in the average wage or in the range of wages. In the latter case the classified wage table is the most apt expression of the facts. If Mr. Wright has emphasized this form of expression as a notable achievement of American statistics, it is because he opposes such a classified statement of wages to the generalities which masquerade under the name of averages but which rest upon no scientific method. The validity of the average if properly attained, and its usefulness as the briefest expression of a complex mass of facts, is fully recognized by Mr. Wright. (See his article, "The Evolution of Wage Statistics," *Quarterly Journal of Economics*, January, 1892.)

It is obvious that if the first be correctly determined the second task becomes an easy one. But given such data as we actually possess the problem is more complex.

We must therefore inquire whether the actual data at our disposal conform to the strict requirements of statistical theory, and in the absence of such conformity how far they may be regarded as accurate. In theory there are many striking analogies between the statistics of wages and prices. As I have already treated the subject of price statistics in these *Publications*[1] I shall be as brief as possible in this division of my subject. What then are the requirements of statistical theory in the matter of wage statistics? They are very simple. Within the geographical unit to which the figures relate the wages of each workman in the occupation considered must be recorded. All the rest is a matter of tabulation. Whether we deem the average wages the best statistical expression of the facts, or the classified wage table more adequate, will depend upon our immediate purpose. Our data will permit either arrangement, but they must be complete. If they are thus complete, if every workman of this occupation is included and no workman of other occupations are included, then none can question the accuracy of the average wages thus obtained. If statements of average wages are contested it can only be because they are not gained in this way and that the method employed is an inefficient substitute for it. Or we may go a step further and make an industry instead of an occupation the basis of our statistics. If all the workmen in the industry within the given geographical unit are enumerated we shall be able to calculate the average wages in the industry beyond the peradventure of a doubt. And if there was any object in finding the average wages in Philadelphia as compared with Reading it could be done without any criticism as to method if the wages of every wage earner in each locality were known. Whether such computations of average wages would be use-

[1] "The Theory and Practice of Price Statistics," vol. iii, 119 *et seq.*

ful would depend on the object of our inquiry. They would only show that different industries or different localities employed a higher or lower priced labor, whether by paying different rates or employing different grades.

Now, if we turn to the actual statistical data on wages, what do we find? Anything but the conditions above described. Either we find general statements which purport to give the average wages in certain occupations, or else figures of actual wages based on limited field of observation. In the latter case, for instance, we might find statistics of carpenters' wages in Philadelphia based on the wages of only a fraction of the workmen in occupation, and if we find statistics of such wages for the State they would in all probability be based on a comparatively small number of places. I have no fault to find with the facts. If practice differs from theory it is only because practical necessity has forced us into short cuts to reach approximately the same results as would be attained by the more cumbersome procedure which theory demands. Our study of actual wage statistics must concern the measure of this approximation and the methods which it uses.

Our interest in wages may attach to two things, wage rates or earnings. While they are frequently confused in popular writings I think statisticians are generally agreed that when wage statistics are alluded to the expression refers to wage rates. Whether such a concensus of opinion is universal or not it will avoid the possibility of misunderstanding to state that in this discussion wages and wage rates are considered identical terms.

In the earlier economic literature statements relating to wages usually took the form that wages of farm hands in England were so many shillings. If this meant anything at all it meant an average wage, and as such it was accepted wherever used. Investigation frequently revealed that in its original form it purported to be the average rate in a particular district, say Devonshire, and that its extension to

England was the work of a later writer. But what validity had such a figure with regard to Devonshire? Generally such statements are entitled to the weight of expert testimony. This assumes the informant to be well acquainted with the field, to have knowledge of the varying rates of remuneration and of the number who receive these rates. Provided the expert's knowledge is broad and deep enough the process by which he arrives at his result is very much akin to the method which the theoretical statistician would use to obtain the true average were he in possession of all the facts. It is a rough and ready method of obtaining the truth, but is open to the objection that it furnishes no material by which to judge the accuracy of the method. The raw material of the average is stored away in the brain of the expert, and he, perhaps, is dead. Of late years both statisticians and economists have grown suspicious of these "average wages" statements and have demanded something better. Yet for the past we are often forced to accept material which we would reject if it applied to the present. Whether for this or other reasons such statements of average wages are frequently accepted as valid. Of such a character are the figures upon which Mr. Giffen based his well-known essay on the "Improvement of the Working Classes."[1] The more detailed and careful work of Mr. Bowley is based upon the same material. Of like nature is the work of the late Joseph D. Weeks of which a large amount is published in the twentieth volume of the Tenth Census. His work for the Aldrich Committee was of a like character and was not therefore given any prominence in the report. Much of the early work of labor bureaus in the United States had no other foundation.

Midway between the statements of experts and real enumerations of wages stand such figures for average wages as are based upon an average of rates. This is a simple device but not very trustworthy. If in a given occupation we find

[1] "Essays in Finance," Second Series.

some men gaining two dollars a day and others one dollar the average wages may be one dollar and a half, but only on the supposition that an equal number is employed at each rate. How often calculations of this nature find their way into the statements of those whom we have agreed to call experts cannot be known, but it is suspected that they are not infrequent, and this suspicion only adds to the disfavor which greets such general statements of average wages.

In the second place we possess wage statistics based upon partial enumerations. The enumeration is always partial as to the occupation, and it is frequently partial as to the locality. In the last issue of these *Publications* Mr. Bullock calls attention to the partial enumeration of the various industries represented in the Aldrich Report, and he also calls attention to the fact that while the report purports to give the course of wages in the United States, all its figures are drawn from States north of the Potomac and east of the Ohio. Statements of a similar nature with respect to the number enumerated in any given occupation and the limited geographical range of the figures would hold true in a greater or less degree in all wage statistics. The highly prized work of the United States Department of Labor, which has been the model for labor statistics the world over, has based all its reports as to wages upon partial enumerations. It is a matter of common agreement that the larger the proportion of persons employed, who are represented in the statistics, the more credence attaches to the results. When one set of wage statistics are commended in contrast to another it is generally because they rest upon a broader basis. From a theoretical point of view they all fail to meet the strict requirements of statistics, and yet we do not hesitate to use them or pass judgment upon their value. What then is the nature of this judgment, and upon what basis does it rest?

Our judgment of wage statistics rests entirely upon our appreciation of conformity to law. The average wage in an occupation is the point towards which all wages tend. If

absolutely free competition fixed wages, if custom had nothing to do with the fixation of rates, we should find within the range of wages an infinite number of gradations. Those which approached the maximum and those which approached the minimum would be relatively few in number. Those which approached the average would be far more numerous. Custom and convenience fix wage rates in round numbers[1] and prevent our having as many gradations as the range would permit. None the less, within a given occupation an economic law, which is universally recognized, tends to bring all wage payments to a level. It is on this law that we rely when we attempt by statistical short-cuts to establish average wages. If such a law exists we may deduce from it two corollaries, namely, that a large number of observations, even if it falls far short of the total number of cases, will contain the average so much more frequently than the variations from it that its average may be deemed the average of the whole; and, secondly, that the wages paid under normal conditions will conform to the average.

Upon these two corollaries all actual statistics of wages rest. As to which of these is the safest basis of operations, where both are available, there cannot be a minute's hesitation. The first is largely mechanical in its workings. Every increase of the field of observation narrows the probability of an undue proportion of abnormal cases. Yet even here the second rule is applied as a precaution. If, for instance, we wish to find wages today in the iron industry we would not seek out the charcoal furnaces, even though among them we might collect a goodly number of quotations. So that in a limited enumeration based on as many quotations as are obtainable we instinctively look for normal conditions or representative establishments.

The difficulty of determining beyond question that conditions are "normal," and that the establishment is in fact

[1] "Round Numbers in Wages and Prices," by E. D. Jones, vol. v, p. 111, of these *Publications*.

"representative," makes us dubious of all wage statistics based on a very limited observation. None the less it must be evident that our whole effort is to obtain normal wages and to eliminate the abnormal. Two ways stand open to us; first, to so increase our observations as to throw possible abnormal rates into the background; second, to assure ourselves that the wages recorded are paid under normal conditions. Theoretically both methods are unobjectionable; practically the uncertainty of the criteria of normal conditions militates against the second method.

Are the objections to the second method such as to cause us to discard it absolutely? I think not. Cautious as we must be in its application we may rest assured that in default of better methods it will be applied. We may justly criticise its use when other methods are available. But under certain circumstances it is the best that can be done. This is especially true of all wage statistics that reach back any distance into the past. For such investigations we must take material which has been saved in the course of time and be grateful. If we are to deem all such records sporadic and abnormal they become useless, and the historical investigation of wages becomes impossible.

It may be noted that with respect to localities the idea of "representative" conditions is applied very generally and evokes no criticism. If we seek the wages of textile workers in Massachusetts we go to Lawrence, Lowell, and Fall River rather than to other localities.

The second point to which the statistical inquiry has been directed has been to the course of wages. The question assumes a different aspect as it relates (1) to the wages of a specific occupation, (2) to the wages of a given industry, (3) to the general course of wages.

In the determination of the course of wages in a given occupation there could be no question if the wages at different epochs had been determined by the theoretically correct statistical method, which, however, is never the case. As

generally some substitute for the true method has been used, it is obviously important that in each determination of wages it shall have been the same substitute. It is probable that each substitute has its own law of variation from the true average. In forming a series it seems, therefore, essential that the same methods be employed for each member. In practice, therefore, one is confronted with the question whether in the absence of a continuous series one shall take such material as is available or create a new series. The Aldrich Report chose the latter method. It took a given occupation in establishments which had been in existence for a long series of years. This required a strong emphasis on the "representative" character of the establishments, which has given rise to criticism in some quarters. This criticism is partially disarmed when it is remembered that the purpose of the report was not to discover actual wages so much as their ratios and direction of change in the period covered.

The other alternative is to take the scattered notices of wages which can be gathered together and to weld them into a continuous series. This has been done very adroitly for England by Mr. Bowley. His material was very ample but very heterogeneous. He carefully avoided comparing one locality with another. If his series of wages consisted of 1860, London; 1870, London and Norfolk; 1880, Norfolk, he adopted the expedient of establishing the ratio of change of London in 1870 as compared with 1860, and using the index thus obtained for 1870 to compare Norfolk in 1870 with 1880.[1] In few countries are the existing materials sufficiently ample to permit the use of such a method. His calculations deal with statements of average wages derived from like sources for each comparison.

The investigation of the course of wages in an industry offers again no difficulty when the theoretical requirements

[1] Mr. Bowley's method received high praise at the meeting of the Royal Statistical Society at which his paper was presented, June, 1895. A very similar process applied to prices will be found in the Aldrich Report, vol. i, p. 81.

of wage statistics are fully met. But, as we have said before, this is a condition which is not found in actual statistics. The actual course of wages in a given industry is the resultant of two forces,— changes in rates paid particular occupations, and a shifting in the relative strength of the different occupations within an industry. In actual statistics it will generally be found that at the best the available data give but a few of the occupations which the industry represents, and that in the absence of good industrial statistics in the past we know nothing very positive about the relative importance of the occupations. If we then attempt to ascertain the course of wages in a given industry it must be with a full consciousness of the limitations which the conditions impose. We have nowhere a full and complete statement of the wages of all classes of occupations within the industry but only of a portion of them. If we cannot accept these as representative then the determination of the course of wages within an industry becomes impossible.

If there is so much reasonable doubt whether the course of wages in a single industry can be even approximately indicated, it would seem impracticable to obtain any notion of the general course of wages. Yet this problem is in reality simpler than the foregoing.

We must at the outset understand that in the actual condition of statistics any attempt to discover the course of average wages is out of the question. It is not a statistical impossibility had proper records been made in the past. In the absence of such records we have no means of ascertaining the average wages of all wage earners. How then shall we attempt to combine such partial information as we possess?

If we are to succeed in this effort we must borrow a device from the technique of price statistics,— the scheme of index numbers. This method of computation has established itself so firmly in price statistics that it is rarely questioned in that field. Its purpose and method is so thoroughly familiar that is needs little explanation. It aims to secure not the

variation of average prices, but the average variations of prices.[1] Its method is commonly described as reducing several series of actual prices to relative prices by taking a certain base line, a year or a period of years, for each series, making the base equal one hundred in each series and subsequent prices in each series proportions of one hundred, and then combining these relative price series into a single expression. It might be explained in another way. It might be said that at the basic period one hundred dollars or marks, or any other denomination of money, would buy a certain quantity of a certain class of goods. The quantity may not be determined, but in the other years we find the sum of money necessary to buy the same quantity of these goods. The same idea might be applied to each series. Our result for the well-known Economist Index Number might then be expressed in this form: What was at the basic period the equivalent of £2200 worth of certain goods, each being represented in the sum of £100 worth, could be purchased at a later period for say £1900.

This explains the simplest form of the price indices for a series of goods as exemplified in the Economist Index Number. The reduction of this sum to an average by dividing by the number of quotations has no other purpose than to make the final result easily comparable to a convenient base,—one hundred. More complex forms of index numbers seek to find a measure of the relative proportions of the different commodities in exchange, and thus approach the idea of the total prices paid for the articles included in the investigation.[2]

[1] Mr. A. L. Bowley, an unfriendly critic of the Aldrich Report in its treatment of wages, understands its method perfectly when he speaks of "Average Change" as "the quantity evaluated in the American report."—"Wages in the United States and Great Britain," *Economic Journal*, September, 1895.

[2] There is in this something of an approach to an average price, if understood in the following manner: — A dealer buys a series of commodities; A measured in gallons, B measured in barrels, and C measured in pounds. While an average price for the three commodities cannot be calculated, we can assume that xA, yB, zC each cost one hundred dollars, and that he buys xA, $2yB$, and $3zC$. Now if at a later period xA costs $105, yB $95, and zC $90, and he continues to buy the same quantities, his total price becomes $565 instead of $600. The average price for what was formerly $100 worth of goods has fallen to $94.25.

It would appear that these complex forms had a justification which must theoretically be denied to the simple average. This theoretical superiority of the complex forms would be of practical importance if there were no such things as "general movements of prices." If each article followed its own law of variation then it would, indeed, be true that we must give greater weight in estimating changes in price levels to a rise in the price of wheat than a fall in the price of nutmegs. If each article in its price movements was a law unto itself, not only would this be necessary but our index numbers must be far more comprehensive than any which exist.

It has been frequently pointed that the various index numbers show a remarkable agreement, and that different methods of calculation on the basis of the same figures bring results which are surprisingly close.[1] This should not be a matter of wonderment, for it is only a confirmation of what index numbers are designed to show, namely, that there are such things as general price movements.[2] If an absolutely uniform law governed prices the matter would be plain. If for a series of articles, *A*, *B*, *C*, and *D*, the prices in a given year were 75, as compared with 100 at a previous period, no importance which might be assigned to any one of them could make the relative price for the group any other than 75. Let us vary the proposition slightly and assume the following indices: *A*, 70; *B*, 74; *C*, 76; and *D*, 80. The simple average of these indices is 75. A system of weighting might indeed change it somewhat but could not lower it below 70 or raise it above 80. If the series showed no agreement, if *A* were 50, *B* 75, *C* 100, and *D* 150, one could not tell whether prices has risen or fallen without knowing the sig-

[1] Professor F. W. Taussig, "Results of Recent Investigations on Prices in the United States."— *Yale Review*, November, 1893, p. 238.

[2] Those who are sceptical with regard to index numbers always seem to me to forget more or less that there must be at any moment "a general level of prices." Professor A. Beaujon of Amsterdam, *Bulletin de l'Institut International de statistique*, 1887, vol. ii, p. 108.

nificance to be attached to the articles. But if these are representative articles of commerce, and there be any general laws governing prices, the last contingency will not arise. The second is far more probable. In times of great economic revolutions it is possible for different classes of articles to vary in different ratios or different directions. In the period 1840–1860 the Aldrich Report showed a marked decline in prices of manufactured products combined with rising prices of food products. But such contrasts are rare; the general rule is variation in the same direction. Moreover, it is to be noted that the quotations of prices usually available for these comparisons are those of the more common commodities, which are subject to the general conditions of the market and reflect its changes.

The application of index-number methods to wages was to my knowledge first attempted in the Aldrich Report, though the suggestion occurs earlier.[1] The method has not yet obtained, perhaps, general recognition in this field, and it has seemed desirable to explain its purpose and operation in a field of statistics where it has obtained a firm footing. What then has been established? Simply this, that inasmuch as prices are subject to general laws the average of price variations is an indication of the course of prices. From the great mass of prices we select a few samples. We find how these sample prices have varied, and we thus find out how all prices vary.

If wages, like prices, are governed by general laws, why should not similar methods be applicable to them? If we can select from the great mass of wages paid a sufficient number of samples, their variation can be assumed to be the variation of wages in general. The question is only as to

[1] In a report to the International Statistical Institute, May 13, 1887, Mr. Robert Giffen, speaking of wages as connected with index numbers, urges that they be considered, adding, "I am disposed to recommend by preference a separate index number, as the price of labor is to be contrasted rather than compared with the prices of commodities." *Bulletin de l'Institut International de Statistique*, vol. ii, 1887, p. 131.

the sufficient number of samples. In the broad field of general wages it is possible to secure such a sufficient number. In the narrower field of an individual industry it may not be possible. Moreover, it must be recognized that a single industry may have a law of variation distinct from the general tendencies. Its higher paid men may be crowded out into other employments, and its lower grades retained. Moreover, it should again be noted that the available wage records will apply in the main to those categories of workmen who represent the general tendencies of the labor market. For it is clear that, other things being equal, the more numerously the occupation is represented the greater is the probability of our finding records of it.

The variety of occupations pursued among the people is perhaps even greater than the variety of commodities. Hence, we find it in practice extremely difficult to collect for a given industry a sufficient number of occupations to secure results which will be altogether satisfactory. Our scattered results, representing an occupation here and another there, are rather to be taken as samples, not so much of a particular industry as of all industry.

In passing judgment upon the results of such calculations one must, moreover, bear in mind the professed relativity of the figures. It is a familiar observation that the numerical terms in which statistics are stated leads persons to regard them as measures of absolute accuracy. Every statistician is aware that his figures in the most favorable cases represent only a high degree of probability, though in most cases a higher degree of probability than can be secured by any other method of determination. Index numbers have been adopted in the historical statement of price changes, because they have proven an acceptable way of indicating these changes. The most fanatical believer in these indices would not contend that he had found in them an absolute rule of measurement. Nor could such a claim be made for the method in

its application to wages. Here again it indicates tendencies rather than measures them. For the utilization of the available data for historical investigations of wages no better method has yet been devised.

Critics of this method have insisted that a more adequate showing could be made upon the basis of average wages. This is not to be denied, but it is contended that no satisfactory account of average wages has been or can be made for past epochs. In all attempts which have been made to compass the end, the conjectural elements are far more numerous than in the index method which has been described. The choice seems to lie between accurate materials and summary indicative methods of combination, and wholly unimpeachable methods of combination based on inadequate and conjectural materials.

A COMPARATIVE STUDY OF THE STATISTICS OF AGRICULTURE OF THE TENTH AND ELEVENTH CENSUS.

By N. I. Stone.

The object of this paper is to make a study of some figures of the Tenth and Eleventh Census relating to farms, and their classification as to size and mode of tenure. With this object in view, the following tables have been prepared by the writer on the basis of the figures given in the tables of the census.

Table I gives in the first two columns the per cent of increase of the number of farms during each of the two decades between 1870 and 1890. These figures have been taken from the volume on Agriculture of the Eleventh Census (pages 1 and 2). The other columns show the increase of total area in farms, as well as the increase in number of farms, in comparison with the figures of 1870, the latter being all reduced to one hundred.

Table II shows what per cent of the total number of farms was cultivated by owners, what by tenants for fixed money value, and what for share of products. This table has also been made up of figures which are found separately distributed through the various tables of the two census volumes.

Table III shows in greater detail what is indicated in Table II. It treats each of the three classes of farms mentioned under seven different groups, according to the size of farms, following the classification of the census. It will thus enable us to state with certainty in what particular group there is a tendency toward an increase or falling off of ownership, tenancy, or sharing of product. The table has been constructed by making the total number of farms in each group equal to one hundred and then calculating what per cent of these comes under the first, second, and third classes, respectively. As the census for 1880 does not give any figures for the five grand divisions (the North Atlantic, South Atlantic, North

Central, South Central, and Western), taken as a whole, it was thought best to take six typical Southern States and twelve of the Northwestern States, thus getting a view of the most important States in the Union in point of output of the staple products of the country,— wheat and cotton.

Although a comparison of the respective figures for 1890 and 1880 in Table III will show the changes that occurred in the last decade, still it may lead to erroneous conclusions unless great care be taken. To take, for instance, the State of South Carolina. The figure in the first group under Class I in 1880 is 16.80 per cent, that for 1890, 22.88 per cent. It would be wrong to draw from this the conclusion that the number of farms under ten acres cultivated by owners has increased somewhat over 6 per cent during the decade of 1880–1890. It may represent an actual increase and may not, and at any rate it does not tell us anything about the absolute increase. What the two tables do tell us is that for every hundred farms under ten acres in 1890 there were more farms cultivated by owners than in 1880. Each of the two tables represents, so to say, a static distribution of farms of a certain size under the various classes. To get at the dynamic conditions, Table IV has been prepared. This table shows us the actual increase per cent in each group since 1880.

Table V represents the distribution of farms according to size, both for the United States and the five grand divisions, as well as for the States given in the previous tables. This table merely tends to show what was the prevailing type of farm cultivation in each of the two decades, without reference to the mode of tenure. The latter point is brought out in Table VI, in which Part A takes up Class I, — farms cultivated by owners. Parts B and C refer to farms rented for fixed money value and share of products, respectively. By making the total in each class equal to one hundred, we find what portion of the total number of farms in that class comes under each of the seven groups. It is only on taking

Table VI in connection with Table III that we get a full idea of the static condition in each of the States or groups. Tables III and VI may be said to represent the same condition from two different points of view, but if we compare Table V with Table VI, we may say that while the former gives us a view of the conditions from the purely agricultural or technical point of view, the latter present the economic aspect of the subject.

Table VII is to Table V what Table VI is to Table III. It shows the absolute increase or diminution for each group in the United States and in each of the five grand divisions.

I.

The first conclusion that forces itself upon the mind on looking at Table I is the remarkable diminution in the rate of increase in the number of farms during the eighties as compared with the seventies. This is true for the United States as a whole, as well as for each of the five grand divisions except the Western. Indeed, the rate of increase in that division is even larger in the last decade than during the preceding one—74.24 per cent as against 73.06 per cent. This is easily explained by the greater facilities which the Western States offer for new settlers as compared with those in other parts of the country. These include greater abundance of unoccupied land, its smaller cost, greater fertility, etc. The relative change in the rate of increase in the number of farms is more correctly represented in column C, which was obtained by representing the number of farms in 1870 by 100; this has the advantage of having the figures reduced to one basis. The difference between the conditions in the Western division and those in the other States is made here more apparent; thus, while the rate of increase for the United States has fallen from 50.71 per cent during the seventies to 20.89 per cent during the eighties, that for the Western division has increased from 73.06 per cent for the former decade to 128.97 per cent for the latter. The other

divisions do not differ much from the United States as a whole, except the North Atlantic, where instead of a diminished rate of increase we see an actual falling off in the number of farms from 1880 to 1890.

The full significance of this table, however, does not reveal itself until we have taken into account the increase of area in farms. Here we may repeat what has been said in regard to the increase of the number of farms. Everywhere, except in the Western division, we see a diminution in the rate of increase. What is more important, however, is that while during the decade of 1870–80 the number of farms had grown faster than the area, the reverse is true of the succeeding decade, *viz:* the growth of the number of farms has not kept pace with the increase of land in farms. This may be seen at a glance on comparing columns A and B or C and F, as well as from the figures representing the average size of farms in the United States, which were 134 acres in 1880 and 137 in 1890; the single exception is in the case of the Southern States (South Central and South Atlantic divisions), which is due no doubt to the crumbling up of the old plantations into small farms, a supposition borne out not only by statements of authoritative writers[1] on the subject, but also by the examination of the other tables which we shall presently make.

There can therefore be no doubt as to the process of concentration which is going on in the agricultural industry of all the other States. The question that now remains is at whose expense does the concentration go on? Two explanations might be advanced: either the medium size, self-supporting farms are swallowed up by the so called "bonanza" farms; or the small farms, generally insufficient to support their owners, are giving way to the medium size farm. Let us look at Table V to see which of the two explanations is more in accordance with actual facts.

[1] See, for instance, General Walker's article on "American Agriculture" in the *Princeton Review*, reprinted in the Tenth Census, volume on Agriculture, p. xxviii. Also E. Levasseur, *L'Agriculture aux Etats Unis*, p. 203 and 204.

Looking at the figures for the United States we see that the number of farms in the group 100–500 acres has increased most, making up 44 per cent of all farms in 1890, while constituting 42.3 per cent in 1880. The only other group which shows an increase is that of 20–50 acres, but the increase is very slight,—from 19.49 per cent in 1880 to 19.77 per cent in 1890,—and is no doubt due to the process of disintegration undergone by the large estates in the South, mentioned above. That such is, indeed, the case may be seen from a glance at the figures under this group for the various geographical divisions; we then see that in all parts of the United States this group has come to represent a smaller fraction of the total number of farms except in the Southern States, where it has risen from 21.86 per cent to 25.27 per cent in the South Atlantic division, and from 23.64 per cent to 26.03 per cent in the South Central division.

Coming back to the figures for the United States we see that all the other groups, small farms and large ones alike, are beginning to constitute a smaller fraction of the total. Following this out for the separate geographical divisions, we can sum up the results under three heads: (1) The South Atlantic and South Central divisions show an increase in the smaller groups and a falling off in those comprising farms over 100 acres; (2) The North Central and Western divisions are marked by just an opposite tendency,—a slight though marked falling off in the lower groups, and a similar slight increase in the groups over 100 acres, with group of 100–500 acres having the largest increase; (3) The North Atlantic division, where we see a falling off through all the groups except those comprising farms between 50 and 500 acres.

But instructive as these figures are they still leave room for doubt as to the cause and real significance of these changes, for the figures of 1880 and 1890 do not indicate any actual change within each group, but merely a shifting from one group to another. To illustrate by an example: The figures for 1880 and 1890 in Table V for the South Atlantic

division show that the lower groups constituted a larger percentage of the total number of farms in that region in 1890 than they did in 1880, and also that the reverse was true of the higher groups. But whether that was due to an actual falling off in the number of farms in the higher groups and their sub-division into smaller farms, or to the fact that the former increased but not so fast as the lower, cannot be seen from the table. Table VII has been constructed to obviate that difficulty.

Each figure in that table represents the per cent increase of the given group as compared with the corresponding figure in 1880. We are thus enabled to see not only the actual change taking place in each group in the various regions, but also in what relation they stand to each other and to the region as a whole. Taking up the table in the same order as we did with Table V we find the same results brought out in a more graphic manner. Group 100–500 for United States has increased over 18 per cent during the decade, making it 5 per cent over the average increase of all farms, 8 per cent over that of the highest group, and nearly 12 per cent over that of the lowest. All groups, however, show some increase. Taking up the divisions under the three heads indicated above we come to the following conclusions: —

1. The diminishing portion which the higher groups make up in the South can now be traced to two causes: (*a*) In the South Atlantic States there is an absolute falling off of 13.19 per cent in group 500-1000, and of 17.37 per cent in that over 1000 acres; (*b*) the smaller groups have increased absolutely and quite considerably, group 20–50 being far in advance of the rest, namely, 34 per cent, which is more than twice the average rate of increase for that region. The same is true, on the whole, of the South Central division, except that there we see some increase in the higher groups as well, though far below that in the smaller groups. This difference may be explained by the fact that the South Cen-

tral division includes States like Tennessee, Kentucky, and Arkansas, which by their geographical positions are a sort of a transition from Southern to Northern conditions, and make it possible for large farms to grow. Not only is this true of the character of the soil, but of the land-owning people as well; besides, the State of Texas alone, also included in the South Central division, goes far in swelling up the figure for the two higher groups. Indeed, it is the *only* State in that geographical division which shows an increase for the two groups, *viz:* from 5988 farms in 1880 to 8717 in 1890 in the group of 500–1000 acres, and from 3793 to 5415 farms in that of 1000 acres and over; all other States in that division having suffered an absolute falling off in the number of farms in the two groups.[1] The remarkably uniform predominance in the growth of the 20–50 group in all the Southern States must be explained by the fact that this represents the most normal holding for an average negro family in the South, just as the 100–500 group represents a normal holding in the North. It is this group that most probably comes in place of the larger estates and serves as a transitional stage of renting for share of product to complete ownership. We shall return to this question again when analyzing Table III. We may state, however, now that the large estates are disappearing, or at any rate are rapidly decreasing in the South Atlantic States, as well as in the South Central, with the single exception of the State of Texas, that the 100–500 type seems to meet with greater favor in the South Central States than along the Atlantic, and that, though it now constitutes the largest group, containing somewhat more than one-third of all the farms, it is going to give way to the 20–50 group, if the latter keep up its present rate of increase.

2. The North Central and Western divisions.— The two divisions differ quite in their appearance as reflected in Table VII. In the North Central we find the lowest group

[1] *Cf.* Table 3, Agriculture, p. 117, Eleventh Census.

increased by over 7 per cent, with the group next to it suffering an absolute falling off of nearly 3 per cent, and the group next to the latter barely holding its own. From group 100–500 up all show great increase, the larger holdings showing also a greater increase. Taking now the Western division we find a great increase in all the groups, ranging from 45.49 per cent to 85.4 per cent, the greatest increase falling again to the lot of the higher groups. The enormous difference between the two geographical divisions in the case of the smaller groups is easily accounted for, (*a*) by the greater cheapness of land in the West as compared with that in the North Central States,—a point of utmost importance to people of small means, for, as we shall see further from Table III, these farms are cultivated mostly by owners; (*b*) by the greater use they can be put to in the West by way of orchards, orange groves, etc. The greater rate of increase in the higher groups is probably due to the greater abundance of fertile, unexhausted soil,—a condition of primary importance in the case of "bonanza" farms, which as a rule devote themselves to extensive cultivation of one kind of grain, preferably wheat; and also to the cheapness of land, a factor which makes itself as strongly felt in case of very large farms as in that of very small ones. Allowing for the differences between the two divisions, as just stated, we still can point to the similar tendencies they both reveal, which are perfectly natural, since they are both largely cereal-producing regions. Thus we find the growth of the higher groups partly in excess and partly at the expense of the lower groups. With regard to the very large farms, as comprised under the two highest groups, so much can be said in answer to the question lately vexing the public mind, as to whether the "bonanza" farm tends to swallow up the smaller farms. As far as the figures of the census indicate, the "bonanza" farm shows a tendency to increase both absolutely and relatively, and in the Western division more so than in the North Central. Indeed, in the latter it con-

stituted but an insignificant though increased fraction, having risen from 1.1 per cent of all farms in 1880 (adding the two last columns for that division in Table V) to 1.45 per cent in 1890. In the Western division the figure is rather significant, namely, 10.18 per cent for 1880 and 10.48 per cent in 1890. But both Tables V and VII conclusively show that the growth is at the expense of the very small holdings, rather than of the normal ones, which are not only holding their own but increase at a rate far above the average for the respective regions. At present that group (100–500) constitutes more than one-half of the farms in the North Central and a little over 60 per cent in the Western division.

Taking some of the separate States in the two divisions the truth of what has been said will become still more apparent. Thus in Minnesota the two higher groups combined barely exceed 1½ per cent, in Kansas 3 per cent, in Nebraska 2½ per cent. But the further West we go the greater does the proportion become, rising from 6.64 per cent in Washington to over 15 per cent in California, known for its enormous wheat farms. The same is true of the very small farms, which are less than 1 per cent in each of the first three States mentioned, and constitute more than 5 per cent in California for the lowest group alone, or 13 per cent for farms below 20 acres.

The increase in the number of farms alone, however, is not a sufficient test in determining the importance of a particular group in the agricultural industry. The acreage which it covers is just as important and in some respects far more so than the mere number of farms. Ten farms in the highest group may contain more land than a thousand in a lower one. In discussing the question of the concentration of land, the latter test is of greater importance than that offered by the number of farms. It is therefore to be greatly regretted that the census tables make it impossible to apply that test, since they do not give the acreage for each group of farms.

II.

So far we have considered the subject merely from the standpoint of size of farms. In the tables reviewed the purely agricultural aspect was more reflected than the economic. The latter is brought out more clearly in the tables which we will now consider.

Table II has been taken from the census. A cursory view will show that in 1890 there was a smaller number (proportionately) of farms cultivated by their owners than in 1880, and this all over the United States except the Western division. The South Central and South Atlantic divisions stand at the bottom of the scale, which may probably serve as a partial explanation for the absence of heavy mortgage indebtedness there. The proportion of farms rented for money as well as those rented for share of products has increased again with the exception of the Western division, and again the Southern States come in for the highest share proportionately of farms rented for share of products.

When analyzing Table I we attributed the rapid growth of the number of farms in the South, as compared with that of the area in farms, to the crumbling up of the old plantations. An examination of the other tables is necessary to prove that supposition. Two other explanations might be advanced: (1) that new hitherto unused land is being taken up for cultivation, but in such small lots as to make the increase in number of farms greater than the increase in area; or (2) that the large plantations are not decreasing in size, but are merely rented out in smaller lots to individual farmers. The former explanation will be found to have no validity when we look at Column D, Table I, which shows that in the South Atlantic division the area under cultivation has actually diminished since 1880. As to the South Central division, where an increase of land is shown, this is not sufficiently large alone to account for the change, though it may do so in part. Two suppositions remain then to be tested, the one originally suggested, namely, the growth of small owners or

the growth of tenants for share of product. If the latter be true, we should see a diminution of large farms both owned and rented, and a growth of small farms rented. If the former, the same diminution of large farms with a corresponding increase of small farms cultivated by owners.

Table VI, already referred to, points to the decrease of large farms and the increase of small ones; it is thus favorable to either supposition, but is not sufficient to apply the latter half of the test. An examination of Table III shows that in the States of Texas and South Carolina there were less farms, proportionately, cultivated by their owners in 1880 than in 1890 in the two lower groups. Parallel with that we see a smaller proportion of farms rented for share of product in 1890 as against 1880 for the same groups, while the number of farms rented for money has changed but little.

Taking up the three higher groups in the same two States we notice a falling off in the proportion of farms cultivated by their owners, and an increase in those rented for share of products. The latter fact may seem to indicate that the large plantations which cease to be cultivated by their owners are rented out bodily by large tenants; but this is hardly the case, and is not borne out by statements in the literature on the subject. It is more likely due to the imperfections of the census, or census enumerators, who have often entered a plantation let out in several parts, sometimes as a unit and sometimes in its several parts as they were rented.[1] In the States of Georgia, Mississippi, and Louisiana we notice a remarkable phenomenon. All the groups (except two in Georgia) have lost in proportion of owners since 1880, and the increase has gone largely to Class II, *i. e.*, farms rented for money. But what at first sight might seem a case of universal divorce of the land-owning and land-tilling classes from their land turns out to be a somewhat more complex phenomenon when we consult Table IV. We there see that

[1] *Cf.* Eleventh Census, Agriculture, p. 2; paragraph 1.

under Class I only the two higher groups have suffered an absolute diminution, except in the State of Texas, as pointed out before, while in the lower groups there has been, on the whole, an absolute increase.[1]

But to return to our test. If we draw vertical lines after the third column in Table III (in the group of Southern States) in each of the three classes, we are struck by the remarkable contrast between the left and right parts on either side of these lines. In Class I we notice the comparatively low figures on the left and high figures on the right; in Classes II and III the reverse is true. If we follow the figures from left to right in Class I we notice an almost unbroken chain of a gradually ascending series of figures, indicating that the smaller farms included under the first three groups are as yet largely rented, and that only about one third is in the hands of owners; but on the other hand we see the three higher groups losing (relatively) in ownership in all the six States, so that no room is left for doubt on that point; still it might be urged that this diminution merely points to the fact that the large plantations are being cultivated less and less by their owners, but not that they slip out entirely of the hands of the latter. Tables VI and IV show the fallacy of such a supposition.

From Table VI we see that the two higher groups in the South Atlantic division, which in 1880 constituted 7.5 per cent of all farms cultivated by their owners, in 1890 amounted to only 5.45 per cent; in the South Central division in 1880 they equalled 6 per cent; in 1890, 5.07 per cent. Table IV shows that this falling off was not merely relative but absolute, since in all the Southern States, with the exception of Texas, brought out in the table, the two higher groups in Class I have diminished by from 5 to 26 per cent, and not a

[1] The average figures for the South Atlantic and South Central divisions for 1880 could not be worked out owing to a lack of classification of the States in the Tenth Census, which would involve almost endless work in getting the few figures. But the six States are typical of the South Atlantic and Gulf States sufficiently to indicate the general tendency in each of the divisions.

single one held its own. Coupled with the simultaneous increase of farms owned in the lower groups, as indicated in Table IV, and an actual falling off in land under farms in the South Atlantic division, as pointed out in analysis of Table I, it can mean only one thing — the conversion of the big plantations into small farms owned by the tillers. The increase of large plantations, rented for share of product, as indicated in the last two columns of Class III of Table IV, means, in the light of this, that before becoming the property of a small farmer they go through a transitional stage of being let out. It is certainly one of the greatest defects of the Eleventh Census that large plantations rented out to several individual tenants should have been entered under the two higher groups instead of under groups corresponding to the size of the lot rented by each farmer. It tends to vitiate all calculations and leads to erroneous conclusions. But for that the figures might have thrown more light on the subject and created less confusion.

Table VI illustrates the shifting from group to group at the time of the taking of the last two census enumerations. Thus we see from Table VI that in 1880 of all farms cultivated by their owners those in the group 100–500 constituted the prevalent type, being in fact a little over one-half of all farms owned. In 1890, however, the group amounted to but 46.04 per cent in South Atlantic, and 51.76 per cent in the South Central division, the latter figure bearing out again the contention set forth above, namely, that the South Central States are more favorable to large holdings, the conditions there being more near those prevailing in the West, generally, than in the States along the Atlantic border. The group which is forcing its way to the front in that class of farms is the one next below it, 50–100 acres. The two groups together are the prevailing types, and probably indicate the condition of farm ownership to which the South is tending through disintegration of the large plantations on one hand

and the increase and gradual transition of the lower groups into the higher on the other.

Part B of Table VI shows that among tenants "for fixed money payments" the group of 20–50 acres constitutes the largest share, the higher groups constituting but a very small fraction.

Part C reveals the same state of affairs, and shows how small the fraction of large farms rented is, even if we did not take into account the inaccurate tabulation of the census enumerators.

A few remarks in regard to the mode of tenure in the cereal-growing States. It is a well-known fact that the bulk of the total mortgage indebtedness in the United States falls on the Northern and Western States; hence we should expect there a greater proportion of all farms to be cultivated by their owners, since the mortgage enables the tiller of the soil to hold on to his old farm or to buy a new one, where he otherwise would have to rent. This is shown by the figures for the twelve typical Central and Western States given in Tables III and IV. Table III show that both in 1880 and 1890 the proportion of those cultivating their own farms to the total was quite high in all groups,—as a rule over 60 per cent, and in many cases near or over 90 per cent.

If we compare the figures for 1890 and 1880 in Table III and draw a vertical line, as was done in the case of the Southern States, we will notice that in most of the groups to the left of the line, *i. e.*, in the three lower groups, the proportion of farms cultivated by their owners has increased, while to the right has mostly decreased; in the latter there are many exceptions, but it is true without exception of the highest group. This of course does not mean that the "bonanza" farm is disappearing, for, as has been shown elsewhere in this paper, they have increased absolutely and at a far higher rate than any other group, but, since their number is comparatively small, they constitute a smaller portion of the whole. Besides, if the figures representing the increase in the acreage

in each group were accessible the "bonanza" farms would undoubtedly make a still better showing. The other more important fact is that the higher groups show a relative increase in Class III. Whether that means that the owners of the "bonanza" farms are beginning to prefer letting their lands to smaller tenants, as is the case in the South, or that owners of land in the lower groups next to the one in question are beginning to rent more land in addition as a sort of transition to the higher group, cannot be said with the poor tabulation of the census.

Table IV, which indicates the absolute growth of each group per cent since 1880, shows that the increase in farms cultivated by owners in the three lower groups is not only relative, but, with a few exceptions, also absolute. The increase is especially large in the three Western States, California, Washington, and Oregon, and this is an additional proof of what has been said before concerning the favorable conditions in the West for the increase of both very small and very large farms.

The most interesting fact, however, revealed in Table IV is that in Class III of farms, *i. e.*, those "rented for share of product," the lower groups show an actual falling off, which, coupled with the increase in Class I, indicates that the tenant of 1880 has become in many cases the property owner in 1890. The higher the group in Class III the greater is the increase. The only explanation we can give for it is that these high figures in 1890 were the foreboding of the subsequent disintegration of the "bonanza" farms, which has been taking place to a considerable extent during the present decade, and which will probably reveal itself in the figures of the Twelfth Census. It is thus very likely that they indicate the same transitional stage from the "bonanza" type to the normal[1] one, as they have in the South, though under

[1] By the normal type is meant here a farm of about 160 acres, which is considered by agriculturalists as sufficient to maintain an average family and keep it employed, with an occasional hiring of one or two men in the harvest season.

different circumstances. If this supposition be true, we should see in the Twelfth Census an increase in the smaller and middle groups in Class I. In connection with this another serious defect in the tabulation of the census must be pointed out. The census bureau was very careful in grading the lower groups, but has unnecessarily included under one head farms as wide apart as those of 100 and 500 acres.

Taking into consideration the definition of a normal farm, given in the footnote, we should say that the more proper classification ought to include farms from 100–200 acres under one head and leave those between 200 and 500 under another. We would then be able to know more accurately which of the two types was the more prevalent one. The defect is especially to be regretted when we recollect, from what has been said of Table V, that this group constituted more than half of all farms in the North Central and Western divisions, and has been increasing since, according to observations of writers on the subject. Besides it just serves as a sort of land-mark between the smaller type, which is not sufficiently large to give enough employment to its owner, and the larger type which represents a purely capitalistic undertaking requiring considerable outlay of capital and employment of a good deal of labor.

So much for these tables. Table V shows us, as in the case of the Southern States, the distribution among the groups in the three classes. From Part A we see that of all the farms cultivated by their owners those in the normal group (100–500) constitute more than one-half. In the separate States the proportion is still higher, rising to over 90 per cent in the Dakotas, though falling to 33.81 per cent in Ohio.

Part B shows that of all farms rented for fixed money value the greater part also falls within the group mentioned. The same can be said of Part C.

As to the North Atlantic Division, we have seen in Table I that there was an absolute falling off in the number of farms here, and a still greater falling off of land in farms. Table

VII shows in detail how this regressive process has affected each of the groups; it appears that the fourth and fifth groups, *i. e.*, farms between 50 and 500 acres, have suffered the least, while the two higher groups have diminished by more than one-fifth and slightly less than one-fourth, respectively.

Table V shows what shifting occurred in the position of these groups according to their numerical strength. The fourth and fifth groups are now in front, still more so than they were in 1880, and the two highest groups have dwindled down to a very insignificant figure. Hence we may say that the medium size farm has grown at the expense of the small and large farms.

III.

Summing up we may say that in all parts of the country the same tendency reveals itself,—the growth of the medium size farm at the expense of the other two extremes. In the South there is besides a tendency for the 20–50 acre group to expand, which is undoubtedly due to the fact that it is about as sufficient to maintain a working family cultivating cotton as the 160 acre farm is in the North, where cereals are raised. In the West, though we have seen the "bonanza" farms have increased to one-tenth of the total and to about 15 per cent in California, it must be remembered that a very great part of these were rented and not cultivated by their owners, which is probably a sigh of disintegration rater than growth; this, however, cannot be definitely settled before we see the figures of the Twelfth Census. The downfall of the large farms in the North Atlantic group has been sufficiently dwelt upon.

In conclusion one more criticism must be made with reference to the census in addition to those made elsewhere in this paper. This is, namely, in regard to the lack of any classification of figures under the heads of live-stock, implements and machinery, value of farm products, cost of fertilizers, improved and unimproved land, etc. Had these data been classified according to size of farms it would have

been a mere matter of close study of figures to determine the causes of the growth of one or another type of farm in the various divisions of the country. Furthermore, no exhaustive study of the economics of American agriculture is possible, in the opinion of the writer, if we cannot tell what portion of the total capital invested in the farm of a given type (size) goes toward paying for land, how much to machinery, how much to cattle, how much to wages for labor, etc. Only a study of this kind would enable us to tell which of the several types is a more economical and therefore progressive and desirable form in the agricultural industry, and which is most likely to ultimately survive. But with all these figures thrown together into one lump sum for each separate county, it is impossible to undertake any such study.[1] In the interest of science, in the interest of American agriculture, it is hoped that the next census of the United States will improve upon its predecessor along the lines indicated above.

[1] For a more complete criticism of the agricultural statistics in the census the reader is referred to an article by the present writer in the collection of essays, published by the American Economic Association, under the title: "The Federal Census." *Critical Essays by Members of the A. E. A.*, March, 1899.

TABLE I.

	A. Increase in Number of Farms		B. Number of Farms in			C. Increase in Number of Farms Expressed on the Basis of Column B.	
	1870-80.	1880-90.	1870.	1880.	1890.	1870-80.	1880-90.
United States	50.71	13.86	100	150.71	171.60	50.71	20.89
South Central Division	73.51	22.57	100	173.51	212.68	73.51	39.17
South Atlantic Division	72.26	16.32	100	172.26	200.37	72.26	28.11
Western Division	73.60	74.24	100	173.6	302.07	73.60	128.97
North Atlantic Division	15.72	—5.40	100	115.72	109.47	15.72	—6.25
North Central Division	50.92	13.30	100	150.92	171.00	50.92	20.08

	D. Increase of Total Area in Farms		E. Total Area in Farms in			F. Increase in Total Area in Farms Based on Column E.	
	1870-80.	1880-90.	1870.	1880.	1890.	1870-80.	1880-90.
United States	31.48	16.25	100	131.48	152.85	31.48	21.37
South Central Division	34.58	17.14	100	134.58	168.55	34.58	33.97
South Atlantic Division	12.42	—1.24	100	112.42	111.02	12.42	—1.40
Western Division	61.52	80.50	100	161.52	291.52	61.52	130.00
North Atlantic Division	8.35	—7.72	100	108.35	100.00	8.35	—8.35
North Central Division	48.60	23.96	100	148.61	184.31	48.61	35.70

TABLE II.

	Per Cent of Farms Cultivated by Owners in		Per Cent of Farms Rented for Fixed Money Value in		Per Cent of Farms Rented for Share of Products in	
	1880.	1890.	1880.	1890.	1880.	1890.
United States	74.44	71.63	8.04	9.96	17.52	18.41
South Central Division	63.79	61.55	11.85	13.98	24.36	24.47
South Atlantic Division	63.88	61.51	11.63	12.82	24.49	25.67
Western Division	86.01	87.91	5.45	5.00	8.54	7.09
North Atlantic Division	84.01	81.60	7.04	7.91	8.95	10.49
North Central Division	79.52	76.62	5.23	7.66	15.25	15.72

TABLE III.—Based on Table IV, Agriculture, pp. 118-119, Eleventh Census, A

	Year.	A. Class I.—Per Cent of Farms in Each Group Cultivated by Owners.							Class II.—Per	
		Group 1.	Group 2.	Group 3.	Group 4.	Group 5.	Group 6.	Group 7.	Group 1.	Group 2.
		Under 10 Acres.	10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.	Under 10 Acres.	10 and Under 20 Acres.
South Carolina	1890	22.88	27.37	20.71	57.61	78.13	88.00	92.38	60.60	43.57
	1880	16.80	20.84	21.49	64.27	84.22	88.78	93.94	62.41	40.71
Georgia	1890	32.00	17.78	15.61	49.74	74.02	87.06	91.58	32.17	17.50
	1880	35.54	15.56	18.06	47.73	81.11	91.09	93.20	25.07	18.76
Alabama	1890	18.76	12.01	21.55	58.71	84.78	88.13	90.36	52.76	40.06
	1880	27.05	12.66	20.30	61.56	87.71	90.29	92.29	28.63	24.90
Mississippi	1890	27.81	7.29	16.81	62.67	85.42	87.18	86.09	30 78	29.12
	1880	31.74	12.56	21.64	68.03	87.42	90.55	93.40	25.95	27.99
Louisiana	1890	40.15	16.90	32.61	74.35	87.24	85.67	85.28	28.14	29.16
	1880	44.67	28.96	42.97	79.75	88.11	87.26	86.58	25.15	27.29
Texas	1890	48.14	21.59	21.87	61.85	83.73	88.06	87.31	17.60	17.42
	1880	41.36	17.97	23.61	72.36	89.58	91.90	94.56	15.38	13.24
Ohio	1890	83.61	83.13	80.73	76.49	73.63	82.98	87.12	10.43	8.23
	1880	83.63	79.95	81.28	80.37	80.41	87.85	88.09	9.89	8.97
Indiana	1890	77.97	72.33	74.79	74.13	74.82	81.72	75.52	10.39	8.88
	1880	71.42	63.65	70.90	76.06	81.11	90.61	83.64	11.70	8.22
Illinois	1890	69.22	63.99	66.99	64.29	66.29	81.94	84.59	18.61	15.36
	1880	65.11	54.47	58.78	65.06	75.37	87.72	89.83	16.48	13.10
Iowa	1890	76.47	75.01	70.77	69.84	72.59	79.10	83.18	16.89	13.41
	1880	76.16	72.67	69.02	72.03	80.22	89.90	89.56	13.13	8.97
Minnesota	1890	80.71	82.31	90.09	88.06	86.64	91.93	81.85	13.50	11.16
	1880	79.84	82.14	89.99	90.44	91.45	89.75	89.65	10.94	5.99
Kansas	1890	72.37	62.76	59.77	66.54	74.11	79.52	78.50	17.44	17.59
	1880	68.56	59.16	64.83	80.27	87.23	87.68	89.37	16.05	12.67
Nebraska	1890	74.33	61.94	61.05	65.40	77.98	89.52	83.05	18.81	21.36
	1880	75.50	58.06	60.67	76.46	86.23	87.54	95.77	10.75	10.73
North Dakota	1890	71.43	71.82	80.45	91.96	93.58	87.01	88.43	28.57	10.00
Dakota	1880	95.24	88.89	81.90	88.67	96.64	93.09	93.24	2.38	1.59
South Dakota	1890	61.54	72.58	78.66	80.90	87.30	85.35	81.28	25.64	14.52
California	1890	85.38	85.99	82.19	82.40	84.48	69.37	71.03	12.21	8.85
	1880	76.05	76.23	76.37	79.29	83.02	74.87	75.19	17.32	15.66
Washington	1890	84.61	87.50	90.97	92.36	91.74	90.11	87.99	11.97	6.50
	1880	83.91	73.24	90.82	91.42	93.49	91.67	91.94	13.79	15.49
Oregon	1890	85.36	82.32	88.62	87.87	88.00	83.42	86.91	11.51	12.06
	1880	74.59	84.54	80.86	84.20	86.70	84.53	91.19	20.00	9.18

H CENSUS, AND TABLE IV, AGRICULTURE, PP. 28-29, TENTH CENSUS. TOTAL IN EACH GROUP = 100.

B. CLASS II.—PER CENT OF FARMS IN EACH GROUP RENTED FOR FIXED MONEY VALUE.						C. CLASS III.—PER CENT OF FARMS IN EACH GROUP RENTED FOR SHARE OF PRODUCTS.						
Group 2.	Group 3.	Group 4.	Group 5.	Group 6.	Group 7.	Group 1.	Group 2.	Group 3.	Group 4.	Group 5.	Group 6.	Group 7.
10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.	Under 10 Acres.	10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.
43.57	34.73	18.66	9.46	6.00	6.41	16.52	29.06	44.56	23.73	12.41	6.00	1.21
40.71	30.68	13.71	6.53	6.09	4.22	20.79	38.45	47.83	22.02	9.25	5.13	1.84
17.50	23.92	18.24	10.36	6.24	4.65	35.83	64.72	60.47	32.02	15.62	6.70	3.77
18.76	22.55	13.80	6.86	3.99	4.01	39.39	65.66	59.39	38.47	12.03	4.92	2.78
40.06	38.87	22.59	7.62	6.81	5.90	28.48	47.93	39.58	18.70	7.60	5.06	3.74
24.90	28.42	15.11	5.29	5.34	4.50	44.32	62.44	51.20	23.33	7.00	4.37	3.21
29.12	32.46	18.97	7.14	7.11	9.07	41.41	63.59	50.73	18.36	7.44	5.71	4.84
27.99	29.18	14.23	6.43	5.51	4.53	42.31	59.45	49.18	17.74	6.15	3.94	2.07
29.16	23.20	11.25	6.69	9.24	10.02	31.71	53.94	44.19	14.00	6.07	5.00	4.70
27.29	19.99	7.46	5.90	8.29	9.40	30.18	43.75	37.04	12.79	5.99	4.45	4.02
17.42	15.65	7.04	3.67	4.40	6.09	34.26	60.99	62.48	31.11	12.60	7.54	6.60
13.24	13.00	5.04	2.65	2.80	2.25	43.26	68.79	63.39	22.55	7.77	5.21	3.19
8.23	7.07	7.17	7.64	6.85	7.36	5.96	8.64	12.20	16.34	18.73	10.77	5.52
8.97	6.13	5.51	5.44	4.66	5.56	6.48	11.08	12.69	14.12	14.05	7.49	6.35
8.88	5.45	5.33	5.00	4.59	7.88	11.64	18.79	19.76	20.54	20.18	13.69	16.60
8.22	5.04	4.18	3.40	2.27	3.28	16.88	28.13	24.06	19.76	15.49	7.12	13.08
15.36	8.87	12.43	12.71	5.87	7.05	12.17	20.65	24.14	23.28	21.00	12.19	8.36
13.10	8.37	8.45	7.15	4.65	2.93	18.41	32.43	32.85	26.49	17.48	7.63	7.24
13.41	11.05	13.13	12.24	7.60	7.24	6.84	11.58	18.18	17.03	15.17	13.30	9.58
8.97	5.46	4.95	3.78	2.00	2.74	10.71	18.36	25.52	23.02	16.00	8.10	7.70
11.16	4.16	3.21	2.41	3.51	6.03	5.79	6.53	5.75	8.73	10.95	4.56	13.12
5.99	2.53	1.40	0.98	0.94	2.76	9.22	11.87	7.48	8.16	7.57	9.31	7.59
17.59	10.51	8.05	4.82	5.42	7.10	10.19	19.65	29.72	25.41	21.07	15.06	14.40
12.67	6.88	3.89	2.30	2.82	1.70	15.39	28.17	28.29	15.84	10.47	9.58	8.93
21.36	14.07	12.72	6.42	7.26	7.92	6.86	16.70	24.88	21.88	15.60	13.22	9.03
10.73	7.46	4.18	2.08	3.45	1.69	13.75	31.21	31.87	19.36	11.60	9.01	2.54
10.00	11.00	4.70	1.76	3.06	2.83	....	18.18	8.55	3.34	4.66	9.93	8.74
1.59	2.86	0.18	0.36	1.22	1.35	2.38	9.52	15.24	11.15	3.00	5.69	5.41
14.52	6.44	6.33	2.36	2.19	3.21	12.82	12.90	14.90	12.77	10.34	12.46	15.51
8.85	10.57	9.38	6.59	11.25	11.93	2.41	5.16	7.24	8.30	8.93	19.38	17.04
15.66	12.32	9.70	6.59	10.17	12.05	6.63	8.11	11.31	11.01	10.39	14.96	12.76
6.50	5.22	3.44	2.73	2.70	2.27	3.42	6.00	3.80	4.20	5.53	7.19	9.74
15.49	3.38	3.44	2.77	5.16	....	2.30	11.27	5.80	5.14	3.74	3.17	8.06
12.06	5.35	5.68	3.43	5.19	5.80	3.13	5.62	6.03	7.45	8.56	11.39	7.29
9.18	6.48	4.99	4.06	5.16	2.84	5.41	6.28	12.66	10.80	9.24	10.31	5.97

TABLE IV.—Based on Table IV, Ag

	Class I.—Increase Per Cent of Farms Cultivated by Owners.							Class II.—Increa for I		
	Under 10 Acres.	10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.	Under 10 Acres.	10 and Under 20 Acres.	20 and Under
South Carolina	62.81	56.42	38.89	18.13	—1.84	—17.49	—22.01	16.09	27.45	6
Georgia	50.90	42.67	26.00	11.61	0.97	—17.44	—22.34	42.09	16.55	6
Alabama	—8.21	—12.71	31.46	9.67	15.18	—14.81	—17.40	143.90	47.90	6
Mississippi	6.25	—12.21	42.20	22.73	20.57	—13.64	—16.82	43.79	57.41	9
Louisiana	1.28	—14.73	33.53	23.61	32.26	—6.02	—4.64	38.98	67.34	10
Texas	13.34	3.31	32.12	34.99	14.97	39.36	75.78	11.41	13.19	7
Ohio	10.39	7.66	4.14	0.25	—11.98	—26.26	—36.04	16.49	—5.04	2
Indiana	28.62	13.18	6.47	—0.76	—5.57	—4.68	—20.87	4.57	7.58	
Illinois	4.38	—1.04	—6.50	—10.71	—9.58	—30.42	—44.42	10.84	—1.19	—1
Iowa	6.67	0.00	—19.59	—11.59	15.06	20.91	9.20	36.59	44.81	5
Minnesota	28.18	27.37	21.84	—0.22	27.55	96.39	74.62	57.14	136.84	9
Kansas	27.82	2.55	—11.38	—7.25	4.03	197.46	—38.57	32.94	34.24	4
Nebraska	10.93	—25.06	—6.39	2.26	88.97	215.78	288.50	97.67	46.05	7
Dakota*	...	....	....	....	....	....	....	....	....	
California	162.96	216.33	138.92	51.45	23.19	35.00	37.12	65.07	58.48	8
Washington	35.62	236.54	344.60	183.30	160.50	242.80	375.40	16.67	18.11	58
Oregon	137.60	142.80	160.40	52.40	54.06	37.50	87.93	18.92	226.30	12

* No estimate is made for the Dakotas owing t

Table IV, Agriculture, Tenth and Eleventh Census.

s II.—Increase Per Cent of Farms Rented for Fixed Money Value.						Class III.—Increase Per Cent of Farms Rented for Share of Products.						
10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.	Under 10 Acres.	10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.
27.45	63.96	79.42	53.22	—17.73	23.19	—5.04	—10.03	35.22	42.09	41.97	—3.65	46.67
16.55	64.93	63.03	64.43	35.00	—9.29	25.69	23.19	53.50	28.78	43.67	17.39	7.22
47.90	69.90	72.00	71.50	11.30	10.70	—18.40	—29.43	—39.04	—7.84	29.41	0.98	—1.67
57.41	99.60	73.89	30.87	16.13	80.72	18.65	61.82	85.63	50.80	48.88	30.32	110.53
67.34	103.57	99.84	50.28	4.47	3.23	18.54	88.76	108.81	49.31	35.52	7.29	13.21
13.19	71.77	118.56	70.48	127.97	270.79	—22.87	—23.74	40.50	11.78	99.40	110.90	195.04
—5.04	20.78	37.02	34.95	14.75	—14.29	1.50	—19.25	1.39	22.02	27.22	6.12	—77.78
7.58	8.95	30.11	50.26	113.33	111.11	—18.76	—33.46	—17.08	5.81	33.44	103.20	11.11
—1.19	—12.98	32.94	82.69	—5.96	42.10	—35.05	—46.34	—39.73	—20.54	23.30	18.94	—31.91
44.81	58.61	141.70	311.42	421.74	210.00	—34.18	—38.89	—44.13	—32.58	20.71	125.81	46.43
136.84	99.51	134.64	236.00	700.00	325.00	—20.34	—30.09	—6.01	9.64	97.80	236.25	236.36
34.24	46.80	132.39	156.81	530.33	1775.00	—9.02	—32.55	0.96	79.51	146.29	415.18	623.81
46.05	75.61	263.94	546.29	630.43	2000.00	—43.64	—61.09	—27.38	35.16	199.30	401.00	1533.33
....	....	....	....	....	....	....	....	....	....	....	....	....
58.48	85.51	40.00	21.55	49.08	43.61	—15.00	78.45	41.48	10.07	1.90	61.94	93.21
18.11	585.70	180.90	159.40	84.67	....	100.00	50.00	191.60	132.29	292.30	700.00	500.00
226.30	120.40	43.02	28.18	57.58	290.00	20.00	123.07	15.12	15.38	39.63	56.16	133.33

kotas owing to their different classifications in 1880 and 1890.

TABLE V.—PER CENT OF FARMS IN EACH GROUP.
Based on Table III, pp. 116-117, Agriculture, Eleventh Census.

	Year.	Total Farms.	Per Cent of Farms Under 10 Acres.	Per Cent of Farms of 10 and Under 20 Acres.	Per Cent of Farms of 20 and Under 50 Acres.	Per Cent of Farms of 50 and Under 100 Acres.	Per Cent of Farms of 100 and Under 500 Acres.	Per Cent of Farms of 500 and Under 1,000 Acres.	Per Cent of Farms of 1,000 Acres and Over.
United States..	1890	100	3.29	5.81	19.77	24.57	44.00	1.85	0.69
	1880	100	3.47	6.35	19.49	25.76	42.30	1.87	0.71
North Atlantic Division.....	1890	100	5.83	7.45	17.79	29.63	38.61	1.49	0.11
	1880	100	6.06	7.68	18.07	29.19	38.29	0.59	0.14
South Atlantic Division.....	1890	100	5.18	8.50	25.27	20.26	36.81	2.89	1.07
	1880	100	5.05	8.37	21.86	19.33	39.97	3.88	1.50
North Central Division.....	1890	100	1.88	2.70	15.36	27.39	51.17	1.22	0.23
	1880	100	1.96	3.15	17.40	29.98	46.38	0.92	0.18
South Central Division.....	1890	100	2.87	8.63	26.03	21.39	37.48	2.45	1.13
	1880	100	3.06	10.19	23.64	20.94	37.94	2.92	1.31
Western Division	1890	100	3.73	4 78	10.75	10.14	60.09	6.35	4.13
	1880	100	4.39	5.16	11.51	12.15	56.46	6.33	3.85
South Carolina	1890	100	7.44	12.96	34.65	15.60	25.51	2.68	1.15
	1880	100	7.62	13.33	29.31	14.50	29.44	3.72	1.74
Georgia	1890	100	2.59	6.34	32.32	18.89	34.69	3.54	1.61
	1880	100	2.31	6.27	26.35	18.79	38.69	5.05	2.53
Alabama.....	1890	100	3.25	7.61	32.86	19.28	33.43	2.57	1.00
	1880	100	2.85	9.61	30.71	19.47	32.57	3.42	1.37
Mississippi.....	1890	100	2.03	12.52	33.51	17.41	30.25	2.46	1.15
	1880	100	2.38	11.74	26.37	18.98	34.75	3.67	1.80
Louisiana.....	1890	100	3.17	14.82	31.96	16.28	29.02	2.92	1.84
	1880	100	4.03	14.09	26.15	17.60	31.12	4.47	2.73
Texas.....	1890	100	1.53	6.33	27.31	20.45	38.19	3.82	2.37
	1880	100	2.06	9.63	25.07	16.96	40.66	3.44	2.18
Ohio	1890	100	4.90	5.83	20.62	32.77	35.41	0.41	0.06
	1880	100	4.51	5.73	20.01	31.64	37.48	0.53	0.10
Indiana	1890	100	2.90	4.03	22.11	32.90	37.24	0.70	0.12
	1880	100	2.51	4.13	22.37	33.00	37.16	0.68	0.15
Illinois	1890	100	1.75	2.91	15.89	28.56	49.72	1.01	0.16
	1880	100	1.69	3.24	18.22	29.75	45.58	1.27	0.25
Iowa.....	1890	100	1.14	1.58	9.12	26.42	59.97	1.56	0.21
	1880	100	1.18	1.80	12.67	31.57	51.34	1.24	0.20
Minnesota	1890	100	0.69	1.04	8.34	22.39	65.96	1.36	0.24
	1880	100	0.69	1.09	8.66	27.63	61.02	0 80	0.15
Kansas.....	1890	100	0.78	0.95	5.56	20.88	68.95	2.30	0.63
	1880	100	0.76	1.19	6.87	22.42	67.99	0.84	0.16
Nebraska	1890	100	0.40	0.45	2.70	17.53	75.70	2.04	0.47
	1880	100	0.63	1.10	5.20	26.27	65.63	1.05	0.17
North Dakota..	1890	100	0.05	0.04	0.42	1.80	90.88	5.00	1.41
Dakota.....	1880	100	0.24	0.36	1.20	3.13	93.22	1.41	0.42
South Dakota..	1890	100	0.08	0.12	1.11	3.53	91.78	2.99	0.37
California.....	1890	100	5.34	7.56	14.54	10.96	46.37	8.25	6.94
	1880	100	3.35	3.97	9.67	11.04	56.25	8.64	7.04
Washington....	1890	100	0.65	1.11	5.09	9.49	77.02	4.93	1.71
	1880	100	1.33	1.08	3.17	9.35	80.24	3.85	0.94
Oregon	1890	100	1.50	2.02	6.37	10.30	70.09	7.08	2.63
	1880	100	1.14	1.27	4.18	10.62	72.70	7.89	2.17

TABLE VII.—PER CENT INCREASE OF EACH GROUP SINCE 1880.
Based on Table III, p. 116, of Eleventh Census, vol. on Agriculture.

	Average Increase.	Per Cent Increase in Number of Farms —						
		Under 10 Acres.	10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.
United States.....	13.86	7.15	4.21	16.02	8.59	18.44	11.09	10.38
North Atlantic Division.....	—5.4	—9.99	—6.74	—6.85	—3.84	—4.76	—20.95	—23.96
South Atlantic Division.....	16.32	19.18	18.06	34.42	21.92	7.12	—13.19	—17.37
North Central Division..... ...	13.30	7.74	—2.93	0.67	3.49	24.89	50.16	49.43
South Central Division.....	22.57	15.58	3.87	34.98	25.11	20.92	3.06	5.45
Western Division...	74.24	47.97	63.96	61.16	45.49	85.46	73.03	85.40

TABLE VI.—Based on Table IV, Agriculture, Eleventh Census, pp

		A. Class I.—Per Cent of Farms Cultivated by Owners.									B. Class II.—Per Cent of Farms Re				
	Year.	Total in Class I.	Under 10 Acres.	10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.	Year.	Total in Class II.	Under 10 Acres.	10 and Under 20 Acres.	20 and Under 50 Acres.
United States..	1890	100	3.03	4.07	15.45	25.68	48.77	2.17	0.82	1890	100	5.70	10.30	30.20
	1880	100	2.95	4.10	15.43	26.99	47.47	2.22	0.86	1880	100	7.30	12.80	30.20
North Atlantic Division.....	1890	100	6.16	7.92	18.82	29.94	36.54	0.52	0.12	1890	100	7.60	8.50	17.50
	1880	100	6.20	7.90	18.80	29.40	36.80	0.60	0.10	1880*	100	....	....	....
South Atlantic Division.....	1890	100	4.22	5.90	15.68	22.69	46.04	3.93	1.52	1890	100	10.10	13.30	38.20
	1880	100	3.20	4.60	13.30	21.30	50.40	5.40	2.10	1880*	100	....	....	....
North Central Division.....	1890	100	1.93	2.57	15.39	26.93	51.63	1.31	0.24	1890	100	3.10	4.10	15.90
	1880	100	1.40	2.60	16.10	29.50	49.40	1.00	0.20	1880*	100	....	....	....
South Central Division.....	1890	100	1.97	2.89	13.67	24.61	51.76	3.48	1.59	1890	100	4.80	15.20	44.70
	1880	100	1.80	3.20	12.70	24.60	52.10	4.10	1.90	1880*	100	....	....	....
Western Division.....	1890	100	3.76	4.80	10.67	10.06	61.23	5.80	3.68	1890	100	6.30	6.40	14.20
	1880	100	4.40	5.20	11.60	12.20	57.30	5.90	3.50	1880*	100	....	....	....
South Carolina	1890	100	3.80	7.93	15.97	20.09	44.58	5.27	2.33	1890	100	16.24	20.35	43.38
	1880	100	2.57	5.57	12.68	18.76	50.08	7.02	3.29	1880	100	20.31	23.19	38.42
Georgia.....	1890	100	1.78	2.43	10.47	20.22	55.27	6.64	3.18	1890	100	4.85	6.46	46.01
	1880	100	1.23	1.77	8.64	18.84	56.96	8.36	4.26	1880	100	9.61	8.68	44.21
Alabama.....	1890	100	1.18	1.78	13.77	22.00	55.09	4.43	1.75	1890	100	6.95	12.35	51.77
	1880	100	1.45	2.29	11.77	22.55	53.75	5.80	2.39	1880	100	4.85	14.20	51.81
Mississippi....	1890	100	1.19	1.93	11.94	23.50	54.79	4.54	2.09	1890	100	2.97	17.31	51.80
	1880	100	1.34	2.62	9.97	22.77	54.06	6.23	2.90	1880	100	3.60	19.15	45.47
Louisiana.....	1890	100	2.28	4.32	18.79	21.75	45.52	4.49	2.82	1890	100	5.26	26.09	43.75
	1880	100	2.78	6.27	17.34	21.67	42.33	6.02	3.65	1880	100	7.34	27.45	37.84
Texas.....	1890	100	1.27	2.35	10.27	21.76	54.99	5.79	3.57	1890	100	3.06	12.53	48.57
	1880	100	1.37	2.77	9.48	19.66	58.35	5.07	3.30	1880	100	4.56	18.38	46.97
Ohio.....	1890	100	5.32	6.28	21.59	32.49	33.81	0.44	0.07	1890	100	6.79	6.36	19.35
	1880	100	4.68	5.67	20.14	31.49	37.33	0.58	0.11	1880	100	7.44	8.57	20.47
Indiana.....	1890	100	3.02	3.96	22.09	32.68	37.36	0.77	0.12	1890	100	5.44	6.48	21.81
	1880	100	2.35	3.45	20.79	32.92	39.53	0.81	0.15	1880	100	6.63	7.68	25.52
Illinois.....	1890	100	1.85	2.82	16.12	27.82	49.94	1.25	0.20	1890	100	2.70	3.68	11.62
	1880	100	1.60	2.58	15.60	28.21	50.06	1.62	0.33	1880	100	3.45	5.27	18.91
Iowa.....	1890	100	1.22	1.67	8.97	25.67	60.50	1.72	0.25	1890	100	1.57	1.74	8.16
	1880	100	1.18	1.72	11.48	29.86	54.07	1.46	0.23	1880	100	3.41	3.55	15.24
Minnesota.....	1890	100	0.64	0.98	8.62	22.64	65.60	1.28	0.22	1890	100	3.21	3.94	11.83
	1880	100	0.61	0.93	8.58	27.51	61.42	0.79	0.15	1880	100	5.59	4.55	16.23
Kansas..	1890	100	0.77	0.84	4.58	19.35	71.20	2.58	0.69	1890	100	2.23	2.79	9.53
	1880	100	0.63	0.85	5.34	21.52	70.60	0.88	0.18	1880	100	3.83	4.72	14.79
Nebraska.....	1890	100	0.39	0.37	2.19	15.23	79.14	2.15	0.51	1890	100	0.95	1.24	4.83
	1880	100	1.58	0.79	3.85	24.50	68.93	1.12	0.22	1880	100	2.21	3.90	12.60
North Dakota..	1890	100	0.04	0.03	0.36	1.81	91.73	4.67	1.34	1890	100	0.74	0.18	2.41
Dakota....	1880	100	0.24	0.33	1.02	2.89	93.73	1.36	1.41	1880	100	1.40	1.40	8.30
South Dakota..	1890	100	0.05	0.10	1.01	3.28	92.26	2.94	0.35	1890	100	0.77	0.69	2.78
California.....	1890	100	5.55	7.93	14.58	10.98	47.77	7.19	5.99	1890	100	7.54	7.76	17.36
	1880	100	3.18	3.78	9.21	10.92	58.25	8.04	6.60	1880	100	6.50	6.90	13.00
Washington....	1890	100	0.59	1.06	5.06	9.58	77.21	4.85	1.64	1890	100	2.59	2.40	8.87
	1880	100	1.20	0.86	3.10	9.22	80.85	3.81	0.94	1880	100	5.70	5.20	3.30
Oregon.....	1890	100	1.47	1.90	6.40	10.35	70.54	6.71	2.61	1890	100	4.06	5.72	8.95
	1880	100	0.99	1.26	3.94	10.41	73.34	7.76	2.30	1880	100	4.80	2.50	5.90

* No figures in the Tenth Cens

CENSUS, PP. 118–119, AND TABLE IV, AGRICULTURE, TENTH CENSUS, PP. 28–29.

B. OF FARMS RENTED FOR FIXED MONEY VALUE.						C. CLASS III.—PER CENT OF FARMS RENTED FOR SHARE OF PRODUCTS.								
20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.	Year.	Total in Class III.	Under 10 Acres.	10 and Under 20 Acres.	20 and Under 50 Acres.	50 and Under 100 Acres.	100 and Under 500 Acres.	500 and Under 1,000 Acres.	1,000 Acres and Over.
30	30.20	22.10	29.80	1.10	0.50	1890	100	3.00	10.20	30.90	21.50	33.10	1.00	0.30
80	30.20	21.60	26.20	1.20	0.40	1880	100	3.90	12.90	31.80	22 60	27.70	0.80	0.01
50	17.50	27.70	38.00	0.40	0.10	1890	100	1.90	3.90	10.00	29.00	55.50	0.40	0.10
.	....	....	....	....	....	1880*	100	....	..	....	....	....	....	....
30	38.20	16.10	20.10	1.40	0.50	1890	100	4.90	12.30	41.20	16.50	23.10	1.10	0.30
.	....	....	....	....	....	1880*	100	....	....	....	....	....	....	....
10	15.90	29.10	46.80	0.90	0.10	1890	100	1.05	2.70	15.90	28.70	50.50	0.90	0.16
.	....	....	....	....	....	1880*	100	....	....	....	....	....	....	....
20	44.70	17.70	15.80	1.00	0.60	1890	100	4.00	19.30	46.40	15.40	13.90	0.70	0.30
.	....	....	...	....	....	1880*	100	....	....	....	....	....	....	....
40	14.20	11.50	44.20	0.40	7.40	1890	100	1.60	3.30	9.30	10.10	57.20	11.20	7.40
.	....	....	....	....	....	1880*	100	....	....	....	....	....	....	....
35	43.38	10.49	8.69	0.58	0.27	1890	100	4.40	13.60	56.20	13.40	11.50	0.50	0.10
19	38.42	8.49	8.24	1.04	0.31	1880	100	5.90	19.10	52.10	11.90	10.20	0.80	0.10
46	46.01	20.04	20.91	1.29	0.43	1890	100	2.40	11.30	53.70	16.60	14.90	0.60	0.20
68	44.21	19.49	19.82	1.50	0.75	1880	100	2.90	13.10	49.80	18.40	14.80	0.80	0.20
35	51.77	17.65	10.33	0.71	0.24	1890	100	3.87	15.26	54.46	15.08	10.63	0.54	0.16
20	51.81	17.46	10.24	1.08	0.36	1880	100	4.21	20.00	52.43	15.13	7.60	0.49	0.14
31	51.80	16.32	10.26	0.83	0.49	1890	100	2.60	25.00	53.40	11.30	7.10	0.50	0.10
15	45.47	16.45	13.65	1.24	0.47	1880	100	3.80	26.20	48.70	12.60	8.00	0.60	0.10
09	43.75	10.79	11.43	1.59	1.09	1890	100	3.60	29.10	51.40	8.50	6.40	0.50	0.30
45	37.84	9.50	13.30	2.68	1.85	1880	100	5.60	28.40	45.20	10.50	8.70	0.90	0.50
53	48.57	16.35	15.93	1.91	1.65	1890	100	1.59	11.67	51.60	19.24	14.55	0.87	0.48
38	46.97	12.43	15.55	1.39	1.74	1880	100	2.91	21.63	51.86	12.48	10.31	0.58	0.23
06	19.35	31.18	35.89	0.37	0.06	1890	100	1.90	3.29	16.40	34.91	43.22	0.26	0.02
57	20.47	29.06	33.96	0.41	0.09	1880	100	2.20	4.75	19.10	33.63	39.98	0.29	0.05
18	21.81	31.77	33.73	0.59	0.18	1890	100	1.69	3.82	22.00	34.01	37.89	0.49	0.10
58	25.52	31.11	28.61	0.35	0.10	1880	100	2.21	6.02	27.86	33.78	29.79	0.25	0.09
38	11.62	29.28	52.14	0.49	0.09	1890	100	0.98	2.74	17.52	30.40	47.74	0.56	0.06
27	18.91	31.16	40.39	0.73	0.09	1880	100	0.33	4.51	25.67	33.83	34.18	0.41	0.70
74	8.16	28.08	59.36	0.97	0.12	1890	100	0.48	1.18	10.54	28.58	57.77	1.32	0.13
55	15.24	34.40	42.73	0.55	0.12	1880	100	0.66	1.71	16.76	37.68	42.59	0.52	0.08
94	11.83	24.55	54.25	1.63	0.49	1890	100	0.40	0.70	4.80	19.50	72.20	1.90	0.30
55	16.23	28.61	44.12	1.56	0.32	1880	100	0.80	0.00	8.30	28.90	59.20	1.20	0.20
79	9.53	27.77	54.86	2.05	0.74	1890	100	0.40	0.80	7.40	23.90	65.50	1.50	0.40
92	14.79	27.19	48.62	0.73	0.09	1880	100	0.90	2.60	14.80	27.00	54.00	0.60	0.10
94	4.83	28.32	62.30	1.87	0.46	1890	100	0.20	0.40	3.40	22.70	71.10	1.60	0.20
90	12.60	35.70	44.20	1.20	0.10	1880	100	0.60	2.30	11.10	34.30	51.40	0.60	0.03
98	2.41	4.45	82.37	7.79	2.04	1890	100	...	0.10	0.70	1.20	85.40	9.90	2.50
00	8.30	1.40	81.90	4.20	1.40	1880	100	0.10	1.00	5.30	10.10	80.50	2.30	0.70
99	2.78	8.65	84.08	2.55	0.46	1890	100	0.10	0.20	1.50	4.20	89.80	3.50	0.60
96	17.36	11.78	35.35	10.62	9.57	1890	100	1.40	4.30	11.50	9.90	44.30	15.50	12.90
00	13.00	11.90	41.50	10.10	9.20	1880	100	2.04	2.90	10.00	11.20	53.60	11.80	8.30
00	8.87	10.90	69.50	4.43	1.29	1890	100	0.40	1.20	3.50	7.30	77.90	6.40	3.00
00	3.30	10.00	69.30	6.20	.. .	1880	100	0.80	3.05	4.60	11.50	74.80	3.05	1.90
02	8.95	11.35	56.69	9.60	3.60	1890	100	0.50	1.30	4.00	9.20	72.10	9.70	2.30
00	5.90	11.60	64.60	8.90	1.30	1880	100	0.60	0.80	5.00	12.10	70.90	8.00	1.40

* Tenth Census for that division.

A NOTE OF CORRECTION.

Some time ago I had the honor of presenting a paper on "Vital Statistics for the Twelfth United States Census" in the *Publications* of this Association. Some comments were also presented in connection therewith which I did not see in advance of publication, and to which I did not consider it necessary to make a detailed reply at a later period. Some misconceptions or misapprehensions of my purpose which appeared in these criticisms would be readily removed, as it seems to me, by reading the paper itself.

It has very recently come to my knowledge that such was not the case, at least in all instances, and that a portion of the review of Prof. Walter F. Willcox, in which he combats the idea of National interference with State affairs, such as might occur if the United States Government should undertake to forcibly regulate State or municipal registration of deaths, was afterwards used, without his knowledge at the time, during the last session of Congress to discredit the plan of collecting some representative mortality statistics of a reliable character from the "non-registration States." This criticism was founded on a misunderstanding of my position. I have not supported such interference or "compulsory coöperation" at any time, and should certainly, as a State registration worker, be one of the last to advocate such a course. I am sure that not one out of the many State registration services which have indorsed the plan of collecting *some* reliable mortality data by means of the census in representative districts of "non-registration States," would have done so if the plan had involved any unwarranted interference with State matters. I have consistently advocated voluntary coöperation of the Federal and State services for this purpose — the example of the State Weather Services in coöperation with the United States Weather Bureau in the Department of Agriculture shows how far such coöperation may go under intelligent direction — but I should earnestly deprecate governmental meddling or attempted dictation in matters

which the National Government has no right to control. This is quite unnecessary, however, in order to secure more reliable mortality statistics.

CRESSY L. WILBUR.

Lansing, Mich., June 7, 1899.

I regret that I misunderstood the contention of Dr. Wilbur and so attributed to him a position which he does not hold. A reader interested in the question whether my interpretation of his language was forced may satisfy himself on that point by reading the original article and my criticism of it in the issue of this journal for March, 1897. Certainly I had no intention or desire to misunderstand.

WALTER F. WILLCOX.

Census Office,
Washington, D. C.